THE THERAPEUTIC GAZETTE

INCORPORATING

MEDICINE AND THE MEDICAL AGE.

Whole Series, Vol. XXXVII. | DETROIT, MICH., AUGUST 15, 1913. | Third Series, Vol. XXIX, No. 8.

ORIGINAL COMMUNICATIONS.

CONCERNING CERTAIN OCULAR INJURIES AND THEIR TREATMENT—BEING A CLINICAL LECTURE DELIVERED IN THE HOSPITAL OF THE UNIVERSITY OF PENNSYLVANIA.

BY G. E. DE SCHWEINITZ, M.D.,
Professor of Ophthalmology.

The management of various types of ocular injury forms an important part of the work of ophthalmic surgeons, and often must be undertaken by those physicians whose work is not confined to a single branch of surgery. Therefore I am illustrating this topic with the patients, which shall in turn be exhibited to you:

CASE 1.—*Punctured wound of cornea, lens, and iris.* A large bonnet pin was accidentally thrust into the left eye of this boy, aged nine, a few hours before admission, penetrating the cornea midway between the center and the periphery in its lower portion. Evidently it has entered obliquely, punctured the iris, and has made an irregular furrow in the capsule of the lens, into the groove of which some soft lens material is protruding, while on each side of it an opacity of the crystalline lens has formed. The injury is now not quite twenty-four hours old. The corneal wound has closed, the pupil is well dilated, and there is little or no ciliary irritation.

This is an extremely common injury, and the problem of its management is a simple one. The patient should be put to bed, the pupil dilated with an active mydriatic—for example, a ½-per-cent solution of atropine sulphate—and constant cold compresses should be applied. In very rare circumstances the opacity which forms as the result of the needle thrust remains stationary; more frequently there is a slow advance. Occasionally one thrust of this character is sufficient to cause an absorption of the crystalline lens in about six weeks, an absorption exactly like that which takes place after the operation of discission of soft cataract. This very favorable outcome is not a frequent one. Usually the opacity continues to progress, the crystalline lens swells, and it is expedient to remove it, either by repeated discissions or by the suction method, or by linear extraction. Occasionally the swelling is rapid, and owing to it there may be iritis or cyclitis, and sometimes, in a manner which I have already explained to you in previous lectures, glaucoma results. In the last-named condition of affairs no time must be lost in evacuating the swelling lens material.

Now it is interesting to inquire what causes the opacity of the lens and its absorption. Stated in its simplest terms, the capsule being opened, the aqueous humor is admitted, and by its action upon the lens fibers they swell up and, in the language of Fuchs, break into layers through a process of cleavage. Gradually the opacity spreads, and in a few days, except in rare instances of localized opacification, the entire lens be-

comes opaque, and as I have told you, may ultimately disappear by gradual absorption. If, however, the capsular wound closes, as it frequently does, the process of resorption stops, and the lens, opaque and slightly shrunken, remains changed into a traumatic cataract.

Parsons, quoting some experimental work, particularly that performed by Schlösser and Schirmer, shows that when the iris is wounded leucocytes penetrate into the lens, and the absorption of the lens fibers is largely due to leucocytes in these traumatic cataracts. They become swollen and filled with granules. This explanation of the cause of lens-fiber absorption after injury and opening of the capsule is disputed by Clapp, because he believes that in the absence of infection many polymorphonuclear leucocytes would not be present, and, moreover, this theory would not explain the absorption of traumatic cataract which may occur after a concussion injury when there has been no rupture of the capsule. The theory advanced by Mr. Marcus Gunn that opacity and liquefaction of the crystalline lens in these circumstances is to be explained by the action of sodium chloride of the aqueous on the globulin of the lens substance, as globulin is normally soluble in weak sodium chloride solution, an explanation which I have myself quoted in some writings on this subject, is vigorously controverted by Clapp and apparently with justice, because a large portion of the protein which the lens contains is insoluble. This author as the result of a research, which, however, is of the nature of a preliminary piece of work, believes that when the lens fibers are broken they undergo autolytic changes, but he has not proceeded to a point to be able to answer the question whether this autolytic change is increased by the action of some specific enzyme, in the aqueous, or whether it is due entirely to autolysis. The whole subject is quite worth additional experimental investigation, although the clinical facts as already recited are well known. The point I wish particularly to impress upon you is the necessity of prompt action should the lens swell and the tension rise, and therefore the need of keeping an eye of this character under close and constant observation.[1]

CASE 2.—*Lacerated and contused wound of the sclera, cornea, and lens capsule.* A boy, aged ten, standing near a bonfire into which a companion carelessly threw a cartridge, was injured by an explosion in this manner, that a fragment cut the lower lid and made a wound in the left eye beginning in the sclera 5 mm. below the lower margin of the cornea and extending diagonally across the cornea for about two-thirds of its vertical diameter, injuring and opening the capsule of the lens in its passage. Into the scleral cut the underlying tissue is prolapsed, while a large prolapse of the iris fills and spreads apart the corneal wound. The right eye is unhurt and normal in all respects.

Evidently the first indication is to remove the prolapsed uveal tissue. This is readily done, as may be seen, by lifting it with an iris forceps and abscising the protruding portions, and with a metal spatula freeing the edges of all adherent material.

Now as to the management of this irregular wound. Should the wound distinctly gape, it would be possible to close it with a very fine suture. I have adopted this procedure in a few instances, but it is not as satisfactory as the plan of De Wecker, Kuhnt, and other surgeons—that is, covering it with a flap of conjunctiva which is dissected up in the form of an apron, held in place with sutures and allowed to remain until the corneal wound has closed, when the sutures are divided and the conjunctiva pushed back into place. Indeed, in extensively wounded corneas De Wecker was accustomed to cover the entire area with conjunctiva, which was dissected loose in such a manner that it could be united over the cornea by a purse-string suture. After healing the conjunctival covering was removed and restored to its original position. This procedure I have

[1] A few days later there was rapid swelling of the crystalline lens, rise of tension and flushing of the eyeball, immediately relieved by a linear extraction of the swollen lens fibers, a few fragments sticking to the capsule being removed by irrigation with a saline solution.

practiced in a few instances with very happy results. In place of covering a wounded cornea with a conjunctival flap in the manner just described, I have sometimes followed the advice of A. Maitland Ramsay to protect the wound with a gelatin wafer which contains 10 per cent of collargol. In these circumstances, the wound being fresh, the collargol-gelatin adheres to it, and to use Dr. Ramsay's words, the wound is sealed and covered up completely with an antiseptic plaster, under which healing goes on with great rapidity. A thin iodoform wafer has likewise been used for the same purpose. In the present instance I shall, after as complete sterilization of the edges of the wound as is possible, by painting them with a solution of cyanide of mercury (1:5000), content myself with the application of a light pressure bandage, and I shall order constant iced compresses for the next day or two. Internally the child will receive for two days small doses of calomel, because there is no question that the administration of mercury in some form or other (and I prefer calomel) has what in olden times used to be called an antiphlogistic action, and that severe ocular injuries heal more satisfactorily and with less reaction after its administration than would otherwise be the case. The pupil must be kept dilated with a sterile atropine solution, and if happily the wound shall close promptly dionin is of distinct service in producing analgesia and reducing the inflammation by virtue of its lymphagogue action. Should the crystalline lens become entirely opaque, as no doubt will be the case, it may be extracted subsequently, and must be extracted promptly if, as in the other patient, swelling and rise of tension should take place. After a few days of mercurial treatment I am in the habit of administering salicylate of sodium in moderate doses, because in an injury of this kind we are not free from the danger of sympathetic ophthalmia. While the administration of salicylic acid in these circumstances could not stop a sympathetic uveitis, there is a good deal of evidence to show that should it unhappily occur its manifestations are less active than when this drug is omitted from the therapeutic procedures. Also, it distinctly lessens the reactive tendency, and lessens too, I think, pain, which is so often associated with injuries of this character. The points I would like to impress upon you in the treatment of an injury of this kind are the necessity of complete rest, the removal of foreign substances protruding between the lips of the wound, covering it, if necessary, with a conjunctival flap, the use of constant iced compresses, the administration of some form of mercurial, followed in turn by a liberal exhibition of salicylate of sodium.[1]

CASE 3.—*Infected wound of the cornea; beginning panophthalmitis.* A boy, aged thirteen, while playing in a vacant lot where some tall weeds with stiff stems were growing, and which some of his companions had utilized in their play as diminutive arrows, shooting them into the air with slings, was struck by one of them and received the injury which you see. He has just been brought into the hospital, the accident having occurred in the late afternoon of yesterday. You observe the lid is edematous, the eyelashes are matted with purulent material, there is a ragged wound in the center of the cornea with gray and infiltrated edges, and the lens, already quite opaque, of a distinctly yellow color. The eyeball is soft and apparently sightless, or at most there is doubtful light perception. Fortunately the other eye is uninjured and perfect in all respects. This is an eye which it does not seem to me there is the slightest chance of saving. So rapid an infection indicates a very virulent process, and in all probability within the next few hours the eye would pass into a violent panophthalmitis. First I shall take a culture from the pus protruding from the wound, and then remove the eye as the safest procedure and one which will be followed with the quickest relief to

[1]The healing of this eye was uneventful, but after dismissal from the hospital the boy returned with some ciliary irritation and swelling of the crystalline lens. In the healing the eye had become adherent to one margin of the corneal wound. The lens was therefore extracted by the linear method, and with a blunt Lang's knife the anterior synechia freed. In turn the eye has quieted, and all signs of iritic and cyclitic involvement have disappeared.

the boy. The eye now having been removed in the usual manner, I open it and you observe, in addition to the lesions already described, purulent material covering the surface of the iris, extending into the posterior chamber and with the anterior third of the vitreous cloudy and infiltrated, lesions which indicate the propriety of the operation which has been performed.

Naturally the question might be asked, had an attempt been made to save this infected eye, what procedures would have been adopted? Haab (and his experience with injured eyes has been a very great one) has recommended, after the evacuation or washing out of any pus from the anterior chamber, the introduction of rods of sterilized iodoform, and he has also introduced these rods directly into the vitreous when infection has begun in that region, and has reported successes. This intraocular method of disinfection has not received the commendation of all surgeons, Krause, for example, believing that iodoform either in the form of powder or rods is incapable of favorably influencing beginning infection, and that on the contrary it may itself produce pathological changes. According to him, it represents a method inferior to other well-known procedures—for example, the use of mercury in the manner which I have already described, and which has been so firmly advocated by Schirmer, who uses inunctions, however, instead of calomel. I have tried the iodoform method in several cases, but my success was so indifferent that it has been abandoned. In a few instances where the infection has been confined to the anterior portion of the eyeball, after expressing the swollen lens and thoroughly irrigating the eye, both the anterior and the posterior chambers, with normal saline solution, the infection has ceased, particularly if in addition subconjunctival injections of cyanide of mercury were administered. In the present instance, however, as we have seen from the dissection of the eye, it is scarcely possible that any of these methods would have achieved success, and therefore it is well that the eye has been removed.[1] Although tetanus is uncommon after eye injuries, it has occurred, and therefore after injuries which have been infected with earth and dirt the administration of antitetanic serum as a prophylactic is advisable.

The next three patients illustrate various phases of ocular injuries from caustics

CASE 4.—*Injury from an exploding zodiac golf ball.* This child, 3½ years old, has met with an accident which is becoming only too common, and to which I draw your particular attention. While watching his older brother cutting open a golf ball which he had found, the knife penetrated the core of the ball, from which there squirted a semiliquid, grayish-white substance which entered the child's eyes. As you observe, the lids are enormously edematous, as is also the bulbar conjunctiva, and with difficulty the cornea is inspected. That of the right eye is comparatively clear, while that of the left is distinctly hazy, and on everting the lids you notice that a thin grayish material covers the entire conjunctival surface, very much in the manner of a false membrane. This ball is the so-called zodiac golf ball, which I now exhibit. Its core is composed of a bag wrapped around with rubber ribbons, and the center of the bag is filled with a grayish-white material, which proves to be a caustic substance, probably sodium hydrate. These and similar balls have recently been placed upon the market, the object of the device being to increase "the carry" of the ball. At first cores of this character were filled with water, but recently they have been found to contain acid material and other caustics. Wound as they are with these ribbons, they are subject to great pressure, and when cut into expel their contents with force, so much force, indeed, that the substance may fly to a considerable distance. A number of accidents of this character have occurred; a number of eyes have been seriously damaged, and in one instance with which I am acquainted the eye was entirely lost.

[1] The bacteriological examination of the pus showed the presence in large quantities of the micrococcus epidermidis albus, and also of the bacillus luteus. The tetanus bacillus was not discovered.

The prognosis depends in large measure upon the depth of the burn and the character of the agent which has caused it. Occasionally the gray scum which I exhibit to you over the cornea of the right eye represents a layer of coagulated epithelium, which is gradually shed without further disastrous consequences. More often, however, after a few days of comparative lack of elaboration of the process the cornea becomes deeply infiltrated, may be infected, and if the conjunctival mucous membrane is destroyed, the surface of the lid adheres to the eyeball and symblepharon results. The prognosis must therefore be very guarded, for this extension of the chemical agent beyond its point of contact, resulting in late deep infiltration or actual destruction of the corneal tissue, is not an infrequent occurrence. In the present instance I remove all of the gray false membrane, which represents layers of coagulated epithelium and fibrin, from the lids with this pledget of cotton dipped in a saturated solution of boric acid, and I shall ask the resident physician, Dr. Birdsall, to repeat this procedure each morning. The pupils will be dilated with atropine and constant iced compresses applied in the hope of reducing the inflammatory reaction.[1]

CASES 5 AND 6.—*Lime burns of the cornea and conjunctiva.* The other two patients represent two different stages of severe lime (mortar) burn of the eyes. The first of these patients, a man aged twenty, while working with a spraying machine containing a solution of caustic lime, received a quantity of it in his right eye. This accident occurred six months ago, and although the treatment was thorough it was impossible to prevent, according to the description which he brings with him from the surgeon who had him in charge, the formation of symblepharon. A strong band attached the outer third of the lower lid to the adjacent eyeball, as well as the outer third of the cornea, where a similar strong band passed from the under surface of the upper lid to the margin of the cornea. The cornea itself is hazy and vascular, and thick, rough granulations cover that portion of the conjunctiva not involved in the symblepharon. Very difficult is the cure of these symblepharic attachments. All manner of operations have been devised, but I shall refer now to only one, and show you the results which have been attained. This is the excision of the symblepharic bands, and to prevent their readhesion the insertion of a Thiersch graft, which was put into place about a week ago. You observe the graft firmly attached to the surface of the eyeball in this white area. The outer end of it, however, failed to become adherent, and one small strand of the symblepharic attachment still persists. The upper graft, however, was more successful, and because of its presence there has been no real reattachment and the lid is freed, so that the eyeball, once practically fixed by these two strong bands, is now comparatively movable and the constant tug of the eyeball against their resistance relieved. Certainly one or two other operations will be required before complete freedom of movement is gained. Naturally the eye is practically sightless owing to the deep infiltration of the cornea. I show this patient simply to illustrate a method of treating symblepharon which sometimes proves reasonably successful. Ultimately these Thiersch grafts become so incorporated with the tissue that in a few months it is difficult to detect their presence.

The other patient's eye is completely destroyed, the upper and lower lids are firmly attached in strong symblepharic bands to the eyeball, which is covered with a thick mass of granulating tissue, and the only procedure required is its removal, followed by an effort to keep the socket open so that an artificial eye can be worn—a very difficult procedure.

Now what shall be done if a patient is seen immediately after lime (mortar) enters the eyeball? First every particle of the offending substance must be removed, and this in my experience is best accomplished by rapid flushing of the eyeball with a forcible stream of water. To be sure, a

[1]Complete recovery followed the use of the measure described.

better plan is the one advocated by Schmidt-Rimpler of using oil with a specially devised syringe, but as such a syringe and such oil are not present usually where these accidents occur, the water treatment, if I may so describe it, is an emergency procedure of value. Because it is believed that sugar will dissolve lime, it has been recommended that the eye shall be douched with a solution of sugar, but as Ramsay pertinently remarks, the rapidity with which lime destroys the tissues is so great that the mischief is done before the surgeon sees the patient. Moreover, the solvent effect of a saccharin solution on slacked lime is gradual. After the removal of the lime, in order to prevent adherence of the lid to the eyeball, various devices have been tried—for example, slipping between the ball and the lid a thin sheet of rubber, or the skin which lines the inner surface of an egg-shell, or a piece of gold-beater's skin. I have faithfully tried these procedures without the slightest success. They fail largely because the movement of the eyelid dislodges the material placed to prevent the adherence. In my experience the best method is daily to break up the adhesions with a probe, introduce either oil or liquid vaselin into which has been incorporated some atropine by rubbing the two together, and using frequent irrigations with the ordinary antiseptic solutions. Even with this method the result is often most disappointing, and in spite of every effort the symblepharon reforms. Still, the method should always be practiced, and sometimes success will be the result.

Although the patients I have demonstrated present no unusual ocular conditions, they represent exactly the type of eye injuries which you are likely in future years to encounter, and therefore you should be familiar with the immediate and later procedures which are required.

In conclusion I may say a further word in regard to the management of certain ocular infections—that is, when the infection has not proceeded so far that panophthalmitis has already begun, as in the unfortunate boy whose eye has been enucleated. Eyes thus infected, particularly if a serpiginous ulcer has formed as the result of some abrasion of the cornea which has permitted the entrance of pathogenic germs, are sometimes most favorably influenced by the administration of autogenous vaccine. From the purulent material the active microörganism is cultivated, a bacterin is made, and injections given at stated intervals, the dose varying from 50,000,000 to 100,000,000, according to the effect. Usually the injection can be given on alternate days, depending upon the result. Another procedure of value is the exhibition of hexamethylenamin, the dose being 0.5 to 1 gramme. There is much clinical and some experimental evidence to show that this drug has a sterilizing influence and checks the advance of infection through the ocular tissues. For example, a patient recently in the eye ward sustained an injury whereby a wound made for the purpose of extracting a cataract was reopened. Violent iridocyclitis followed, with hypopyon, and the edge of the wound became gray and infiltrated. From this infected wound margin a pure culture of staphylococcus aureus was obtained, a bacterin was made and injected in the manner I have already described, and the patient given 0.5 gramme of hexamethylenamin every four hours for two days, when the dose was slightly reduced. Within twenty-four hours after this treatment was begun the inflammation began to subside, the hypopyon disappeared, the edges of the corneal wound lost their infiltration, and within ten days the eye was white and quiet. This represents a success in therapeutic measures most gratifying, for eyes of this character only too frequently in earlier days were lost in spite of active medication.

Finally, let me impress upon you, in the management of all ocular wounds, especially those of a penetrating character, the necessity of perfect sterilization, not only of the instruments employed, but of the fluids which are used, particularly the mydriatics and local anesthetics. They should always be entirely fresh, and cocaine, atro-

pine, etc., dissolved in sterilized distilled water. Another point of importance is an examination of the nasal passages. Very often there may be some infective rhinitis, and from this area bacterial elements may pass through the tear passages into the conjunctival sac. An excellent routine practice is thoroughly to spray the nasopharynx with a 1:5000 solution of permanganate of potassium. It can do no harm, and may be the means of preventing a spread of infection from these areas.

THE HYPERCHLORHYDRIC SYNDROME: PATHOGENESIS AND TREATMENT.[1]

BY A. A. STEVENS, M.D.,

Professor of Therapeutics and Clinical Medicine in the Woman's Medical College of Pennsylvania, and Lecturer on Medicine in the University of Pennsylvania.

Although hyperchlorhydria has been the subject of numerous investigations, and there is already an enormous amount of literature bearing upon it, there are still many points relating to the condition which require elucidation. Hydrochloric acid is secreted probably only in the fundus of the stomach, and the quantity produced is influenced by a large number of factors. Some of these operate in a reflex way, the vagi serving to transmit to the stomach the impulses which have been excited in the central nervous system, while others operate directly upon the stomach itself, or, as is generally assumed, upon the sympathetic endings in the wall of the stomach. That these two forms of secretion—the cephalogenous and the endogenous—exist can readily be demonstrated experimentally. Thus food that is masticated and swallowed, but is allowed to escape through an esophageal fistula before it reaches the stomach, excites a flow of normal gastric juice; and, on the other hand, food that is introduced directly into the stomach through a gastric fistula and which has not been seen, touched, smelled, tasted, or masticated, also calls forth normal gastric juice. The chief factors in reflex or cephalogenous secretion are the appetite, the sensations of touch, taste, smell and sight, and probably the act of mastication itself. The important factors in endogenous secretion are the physical state of the food, its temperature, and, above all, its chemical composition. The total secretion of hydrochloric acid, unlike the total secretion of gastric juice, is not related to the amount of food ingested, but is approximately proportional to the protein in the diet, the physical state of the food and the temperature of the food being factors of minor importance. With meats the secretion is the most acid, and with carbohydrates it is the least acid. Fats depress acid secretion. Normally, whatever the diet there is a tendency for the establishment of a fairly constant degree of free acidity, although the quantity fluctuates within narrow boundaries. In certain pathologic conditions, however, the total amount of acid secreted is far more than is necessary to satisfy the affinities of the protein in the stomach, both that taken as food and that contained in the mucus, and in consequence the excess of free hydrochloric acid rises above the normal.

As to what constitutes hyperacidity, opinions differ. Considering the matter from the purely chemical standpoint, however, the majority of writers assume that any amount above 0.2 per cent is to be regarded as a hyperacidity. The question of the relative frequency of the condition based upon definite percentages has also been variously answered by different observers. Fleiner, Westphalen, and others have claimed that it is comparatively rare, while Bouveret, Riegel, and many American authorities believe that it is very common, not a few of the latter estimating the frequency at 50 per cent of all chronic gastric affections. This difference of opinion as to the comparative frequency of hyperchlorhydria, while it may be ascribed in part to differences in nationality and social conditions, is due very largely, without doubt, to a lack

[1]Read at a meeting of the Section on General Medicine of the College of Physicians of Philadelphia, April 29, 1913.

of uniformity in the methods of examination. Some investigators have based their calculations upon one or at most two examinations, which cannot be regarded as sufficient. The findings in first examinations are often misleading, as the emotional disturbance excited by the use of the stomach tube frequently causes temporary derangement of secretion, and, moreover, in many individuals the amount of acid secreted varies considerably from day to day. It is not an uncommon experience to find on one day hypochlorhydria and on the succeeding day well-marked hyperchlorhydria. Then, again, some of the studies have been made upon private cases, while others have been made in hospitals. The results have naturally been divergent, for, as Riegel has said, hyperchlorhydria is more likely to be seen in private practice than in hospital practice, the symptoms of the condition rarely becoming so severe that patients are forced to enter a hospital. Finally, some experimenters have worked with the non-stimulating trial breakfast of Ewald, and others have employed the more palatable proteid-containing meal of Riegel. The lesson to be drawn from all this, and which seems to me should be given more emphasis, is that the results obtained from chemical analysis of the stomach contents are of little aid in diagnosis, unless they are based upon several examinations with different meals, and unless they show pronounced departures from the standards usually accepted as normal, as the amount and quality of the secretion depend upon so many factors and the variations seen in the same individual under different circumstances are so great.

Another factor which adds even more to the difficulty of determining the relative frequency of hyperchlorhydria is the total lack of harmony in many cases between the chemical findings and the subjective symptoms. Clinically, three groups of cases may be recognized: First, those in which the usual subjective disturbances of hyperchlorhydria are present and examination of the gastric contents reveals a high degree of acidity—60 or over; secondly, cases in which the subjective disturbances of hyperchlorhydria are present but in which examination of the gastric contents reveals moderate or even low acidity; thirdly, cases in which no gastric symptoms are present, and yet examination of the gastric contents reveals a high degree of acidity. Stockton (*Journal of the American Medical Association,* Jan. 11, 1902) was the first to point out that in many cases in which the symptoms of hyperchlorhydria are present the acidity is really normal or subnormal, and this view was subsequently supported by Steele, von Noorden, and Riegel. Laboulais had under observation a patient with symptoms of hyperchlorhydria, and proved by analysis of the gastric contents that at the very time when the pains were relieved by the administration of sodium bicarbonate there was practically no hydrochloric acid present in the stomach.

On the other hand, Schüle (*Zeitsch. f. klin. Med.*, 1895, xxviii), Sorensen and Brandenburg (*Archiv f. Verdauungskrank.*, 1897, iii), Gintls (*Archiv f. Verdauungskrank.*, 1898, iv), Illoway (*Archiv f. Verdauungskrank.*, 1902, viii), Kauffmann (*Zietsch. f. klin. Med.*, 1905, viii), Steele (*Jour. Amer. Med. Assoc.*, Aug. 18, 1906), and others have cited cases showing that a great excess of hydrochloric acid may exist without any symptoms at all. Kauffmann in a series of 19 patients free from gastric symptoms found a total acidity of over 70 in ten and over 100 in two. Herschell (*Brit. Med. Jour.*, Jan. 21, 1911) in 100 consecutive cases presenting the symptoms of hyperchlorhydria found an excess of acid in 68, normal acidity in 21, and subacidity in 11.

It is evident, therefore, that an excess of hydrochloric acid is not the sole factor in producing the hyperchlorhydric syndrome, otherwise the latter would be present in all cases of high acidity and absent in all cases of low acidity. In further confirmation of this view is the fact that the symptoms of hyperchlorhydria often disappear under appropriate treatment even though the degree of acidity still remains high, and also the fact that the introduction of hydrochloric acid into the stomach in amounts much in

excess of those ever found in disease is not productive of pain. In three patients on whom gastrostomy had been performed Schmidt (*Mitt. a. d. Grenzeb. d. Med. u. Chir.*, 1908, xix) introduced into the stomach from 20 to 40 Cc. of ½- and 1-per-cent solutions of hydrochloric acid, without exciting the slightest pain or discomfort. Two of the patients subsequently died, and autopsy revealed perfectly normal gastric mucosæ. Hertz (*Lancet*, April 22, 1911) has repeated these experiments with the same results. In six cases of gastric ulcer, in all of which the diagnosis was confirmed by operation, 4 ounces of 0.5-per-cent solution of hydrochloric acid, introduced into the stomach by a tube, produced no sensation whatever. It is thus clear that the pain which is often associated with an excess of hydrochloric acid in the stomach cannot be due to the action of the acid alone. It is equally clear, however, that the acid is in some way connected with the production of pain, as rapid relief always follows the administration of an alkali or the evacuation of the stomach.

It is of the utmost importance to determine, if possible, what the factor is which in conjunction with an excess of acid, and sometimes in the absence of such excess, is the cause of abdominal pain, for treatment that does not take this factor into consideration can scarcely be more than symptomatic.

Talma (*Zeitsch. f. klin. Med.*, 1884, Bd. xiii) suggested that the symptoms of hyperchlorhydria may be due to hyperesthesia of the gastric mucosa, and this view has been accepted by Stockton, Steele, Kauffmann, and others. However, the histologic studies of Gaskell, Langley, and others, and the investigations of Lennander, James Mackenzie, and more recently of Hertz (Goulstonian Lectures on the Sensibility of the Alimentary Canal, 1911) have demonstrated conclusively that the stomach and other viscera are not sensitive to tactile or painful stimulation, and that the afferent nerves of most organs convey impulses without sensation of any kind being experienced. It is generally accepted, therefore, that pain which feels as if located in the stomach has its true seat in one or other of the structures of the abdominal wall, the afferent sympathetic nerves conveying certain stimuli originating in the stomach to the segments of the spinal cord from which come the sensory nerves supplying the skin and muscles in the painful region. If we accept this view, we can readily understand why the tender area in gastric ulcer may be quite remote from the actual seat of the ulcer unless it is caused directly by the spread of the inflammation to the sensitive overlying structures.

The explanation of the pain in hyperchlorhydria, as well as of that in gastric and duodenal ulcers, which best harmonizes with all the facts, is that it is the peripheral expression of a cramp or spasm affecting the unstriped muscular fibers in the stomach, and, therefore, is analogous to that produced by irregular or excessive contraction of unstriped muscle in other organs, as for instance the bowel in cases of mucous colic, an affection in which pain is also combined with secretory perversion. Modern experimental investigation strongly suggests that abnormal excitability of the vagus region may be a factor, at least in some cases, in initiating the painful spasm which appears in the hyperchlorhydric syndrome, as well as in many cases of peptic ulcer, and that it may in some instances even play a part in the production of gastric erosion and ulceration. The results of numerous experiments show conclusively that the sphincters of the stomach are partially controlled by the central nervous system, and that in general the fibers received from the vagus are augmenters. Artificial stimulation of them causes, as May (*Jour. of Physiol.*, 1904, xxx) has shown, first, an inhibition of the peristalsis of the pyloric portion, with a lessened tone of the cardia, followed later by an acceleration of peristalsis in the pyloric region with increased tone in the cardia. Talma (*Zeitsch. f. klin. Med.*, 1890, xvii) faradized the vagus and caused spasmodic contractions of the stomach. He then applied dilute hydrochloric acid to the mucosa and produced gastric ulcers. Van Yzeren (*Zeitsch. f. klin. Med.*, 1901, xliii)

and Ophüls (*Jour. Exp. Med.*, 1906, viii) got similar results in rabbits by cutting the vagi below the diaphragm, although according to the former the vagotomy caused cramp of the stomach, and according to the latter it caused marked dilatation. Westphal quoted by Von Bergmann (*Münch. Med. Woch.*, 1913, lx) obtained hemorrhagic erosions in the stomach and duodenum of rabbits treated with drugs like pilocarpine, which irritate the vagus. In one case a true peptic ulcer developed and perforated. Eppinger and Hess (*Zeitsch. f. klin. Med.*, 1909, lxviii), who have recently conducted extensive researches on the antagonism between the sympathetic and the vagus nerves in respect to their response to atropine and pilocarpine, found it possible to reproduce artificially with drugs the clinical symptoms of abnormal excitability of the vagus and also to inhibit with atropine both the natural and the induced symptoms. These investigators, who coined the term "vagotomy" for this condition of abnormal excitability of the vagus, noticed the frequent coincidence of the condition with gastric ulcer and found that the pain with a gastric ulcer is peculiarly intense in "vagotonicers."

I have dwelt upon the influence which the central nervous system may exert in producing gastric irritability with pain because I believe that in many cases no treatment of hyperchlorhydria can be really curative that does not take this influence into consideration. Hyperchlorhydria is merely a symptom, a functional disturbance, the cause of which differs widely in different cases. The treatment should be begun, therefore, by endeavoring to remove the cause, although this is often more easily said than done. It is above all necessary to scrutinize the habits of the patient and to search thoroughly the various abdominal organs for centers of irritation. Aside from organic disease of the stomach itself, such as peptic ulcer, incipient chronic catarrh, and gastrectasis, hyperchlorhydria is frequently related etiologically to chronic disease of the gall-bladder or appendix, or to some affection producing constitutional disturbance such as chronic cardiac or renal disease, or chlorosis. Apparently constipation itself may be an important factor, although doubtless in the majority of cases it is the result rather than the cause of the hyperacidity.

In approximately one-half of the cases there is no evidence of structural defects either in the stomach itself or any of the adjacent organs, and the condition must be regarded as a perversion of function *per se*. Examples of this type are most frequently observed in young adults, both male and female, engaged in professional or clerical work. Mechanics and laborers furnish but a small proportion of cases. Indiscretions in eating and drinking, the excessive use of tobacco or alcohol, and above all, mental or emotional strain, are the principal causes. Obviously, therefore, these should receive the most careful attention.

In hyperchlorhydria from brain tire, travel, properly directed, often accomplishes far more than any method of medicinal or dietetic treatment, and may be confidently recommended to those who can afford it. In the majority of cases the chief aim must be to prevent any direct irritation of the stomach and to allay the morbid excitability of the nerve centers, or while attempting this to impair the conductivity of the nerves conveying impulses from the central nervous system to the stomach. Regular meals, regulation of the temperature of the food and drink, thorough mastication, avoidance of excesses in eating, drinking, and smoking, are cardinal points. Thorough mastication is especially important, for the more comminuted the food, the more bland it is, the more acid it binds, and the shorter its stay in the stomach. The alkalinity of the saliva is too slight to have much neutralizing effect, but the larger amount of mucus entering the stomach in consequence of thorough insalivation may be of advantage in this respect, as it is known that the mucus normally combines with one-fourth of the hydrochloric acid secreted.

Divergence of opinion still exists upon the question whether the diet should be composed chiefly of proteids or of carbohy-

drates. Penzoldt, Riegel, Meyer, and others advocate large quantities of proteids, while Von Sehlern, Hemmeter, Bachmann, and others favor a preponderance of carbohydrates. Proteids, as has been shown, produce more acid, but at the same time combine with much of the excess and thus neutralize it. On the other hand, carbohydrates, while they call forth less acid, have no neutralizing power. Theory aside, the experience of actual practice seems to have demonstrated that although the patient is temporarily more comfortable upon a diet composed largely of proteins, no form of diet, proteid, carbohydrate, or mixed, has much power to reduce permanently the secretion of acid (Riegel, Kauffmann, Steele, Friedenwald, and Fischer). Therefore, the aim of treatment from the dietetic standpoint should be to improve the general nutrition, and thus lessen the morbid impressionability of the nerve centers, and at the same time to avoid everything that is likely to irritate the stomach directly. This is best accomplished by a liberal mixed diet of nutritious, bland, easily digestible food.

Vegetables poor in cellulose are the most suitable, and these are best taken in the form of purées. Tea and coffee should be used sparingly, if at all. Alcohol is generally inadmissible. Water-drinking at meals, provided it is not excessive and the temperature of the water is not too low, is not objectionable and may even act favorably by diluting the gastric juice. Boas (*Therap. Monats.,* May, 1906) regards it as an essential part of the treatment. Excessive smoking is distinctly harmful, but the question of cutting off tobacco entirely needs to be considered for each individual case. Foods to which vinegar or spices have been added and highly seasoned dishes of all kinds must be interdicted. Fat has a beneficial influence. When administered as a medicine in the large amounts sometimes recommended patients often turn against it, but when taken liberally as food in the form of butter, cream, and olive oil, it usually proves acceptable and efficacious. Fat not only depresses acid secretion, as Penzoldt, Boas, Pawlow, Bachmann, and others have showed, but it also causes an actual reduction of acidity by inviting a regurgitation of the alkaline duodenal contents into the stomach—a phenomenon made use of by Boldireff (*Centralbl. f. Physiol. u. Path. d. Stoffwecks,* 1908, No. 6), Farr (*Jour. Amer. Med. Assoc.,* Dec. 11, 1909), and others in obtaining duodenal secretions by way of the stomach. Boldireff believes that when fatty food is taken gastric digestion is carried on largely by the ferments of the pancreas, and further, that these ferments may be a factor in the production of some forms of gastric ulcer. Whether fat has any other function in the stomach is not definitely known, but it is not improbable that it also acts mechanically as a demulcent protecting the stomach from the action of irritant food and secretion.

Of drugs, the most suitable are those which protect the stomach directly against irritation, those which neutralize acidity, and those which diminish the abnormal excitability of the nerve centers or nerves. The best representatives of the first class are bismuth subnitrate and silver nitrate. Bismuth subnitrate is chemically inert and acts purely in a physical way by protecting the stomach against particles of food and irritating secretions. It may be given in doses of 20 grains or more, half an hour before meals. Silver nitrate probably also acts mechanically by forming in the stomach a thin coating of silver albuminate. It may be given in doses of ¼ of a grain half an hour before meals.

Of the alkalies, the most suitable are sodium bicarbonate, magnesia, and calcium carbonate. The ammonia preparations, owing to their stimulant properties, are undesirable. Sodium bicarbonate acts promptly and has no action on the bowel. It has the disadvantage, however, of giving rise to the formation of large quantities of CO_2, which may lead in time to distention of the stomach. Another objection that has been urged against sodium bicarbonate is that sodium chloride formed from it in the stomach tends to increase the secretion of hydrochloric acid, but this objection is probably not valid, as the amount of sodium chloride

formed is very small and there is under ordinary conditions more of the salt present than is required in the production of acid. Magnesia has an advantage over sodium bicarbonate in that it neutralizes more acid. It is especially useful when hyperacidity and constipation coexist. Calcium carbonate may be substituted for sodium bicarbonate or combined with it when the hyperacidity is associated with a tendency to diarrhea. There is no experimental evidence to support the belief held by many writers that alkalies in themselves increase the secretion of acid. Reichmann (*Archiv f. Verdauungskrank.*, i) has shown that in man distilled water increases the free acid about as much as an equal amount of alkaline solution. Alkalies should be given at the height of digestion and, as a rule, in doses proportionate to the protein content of the meal; the smaller the amount of protein ingested, the smaller the amount of alkali needed.

Of sedatives, the most efficacious are the bromides and belladonna. The bromides have been very generally recommended. They are particularly useful when the hyperchlorhydric syndrome occurs as part of a wide-spread nervous erythism. In many cases strontium bromide is better borne than other bromides and is equally effective. Opinions differ as to the value of belladonna. When given indiscriminately it is, perhaps, as likely to fail as it is to succeed. Its virtue depends apparently more upon its power to lessen irritability of the vagus and prevent spasmodic contractions than upon its power to depress the secreting fibers of the vagus and diminish the secretion of gastric juice. Belladonna seems to have the peculiar property of arresting cramp-like contractions in the alimentary canal without interfering with normal peristalsis. Thus, it arrests the griping pain which active purgatives tend to induce without inhibiting in any way the movements which these drugs excite in causing evacuation of the bowel. It may be that the nervous mechanism which presides over tonicity and the violent contractions productive of pain is somewhat different from that which presides over normal peristalsis. This independence of tone and peristalsis has only been recognized since the introduction of the *x*-rays as a means of investigation. As Hertz (*Brit. Med. Jour.*, Feb. 3, 1912) has shown, normal peristalsis is frequently observed in atonic and dilated stomachs, and in rare instances peristalsis is diminished in hypertonic stomachs. The cases of hyperchlorhydria in which belladonna or atropine is especially serviceable are those which display the symptoms of abnormal excitability of the vagus (vagotomy), to which Eppinger and Hess have recently referred, or the phenomena described by Gowers (*Borderland of Epilepsy*) under the heading "Vagal and Vasovagal Attacks." The drug may be given in the form of the extract in doses of ⅛ to ¼ grain, three times a day, or as atropine in doses of 1/120 grain, more or less, two or three times a day.

TREATMENT OF ASTHMA.[1]

BY M. HOWARD FUSSELL, M.D., PHILADELPHIA,
Professor of Applied Therapeutics in the University of Pennsylvania.

In this discussion I shall confine myself to the treatment of spasmodic, nervous, or bronchial asthma, disregarding the so-called renal and cardiac asthma, and speak in addition only of the treatment of emphysema and cardiac failure as the final picture of spasmodic asthma. The rational treatment of any condition must depend upon an appreciation of the cause of that condition and upon its diagnosis.

Time will permit of little discussion of diagnosis. Suffice it to say that this must depend upon the history of the case, and the careful examination of the urine and of the heart. The attack is unmistakable with its difficult relatively short inspiration and its more difficult and prolonged expiration. If there is no renal or heart lesion surely the

[1]Read before the Section of Medicine of the College of Physicians, February, 1913.

cases are primarily spasmodic asthma. If the heart is dilated and decompensated, the asthma is doubtless directly due to the failing heart; whether this is primary or secondary to the asthma must depend upon the examination and the history. Albuminuria is rare in pure spasmodic asthma. In a patient with high blood-pressure, albuminuria, low specific gravity urine, the attack of asthma is likely to be secondary to the renal lesion.

Many theories have been spun as to the cause of asthma.

Every one has recognized the marked neurotic element in practically all cases. The explanation as to its mode of action has been varied. The one which has finally been accepted as most likely true is that the primary result of the determining factor is stenosis of the bronchioles due to contraction of their muscular fibers.

Meltzer, basing his opinion upon experiments of Auer and Lewis, believes that this muscular contraction is entirely peripheral, has no central origin, and the diaphragm is not at all involved. He advances the theory that attacks of asthma are in reality evidences of anaphylactic reaction, the result of the patient becoming sensitized in some unknown way and then infected by having introduced into the circulation the identical poison by which he was "sensitized."

This he apparently substantiates by the many close resemblances of anaphylactic conditions to asthma, the latter being respiratory phenomena due to permanent stenosis of the bronchioles, and relieved, prevented, or cured by the use of atropine.

It is known that some forms of hay-asthma are due to pollen of certain grasses or weeds, by which the individual has been "sensitized." Certainly Dunbar has proven this in his experiments. This is also the fact where individuals get asthma as the result of emanations from certain animals. An experiment not yet published was performed in the presence of the medical staff of the University of Pennsylvania by one of the teachers, himself the subject of asthma when he inhaled the air of a room occupied by rabbits. When the skin of the arm is slightly scraped and some serum of rabbit's blood poured upon the abraded surface, a typical wheal develops in a few minutes, doubtless the result of the anaphylactic state.

Prophylaxis.—I have dwelt thus upon the fact that asthma, at least frequently, is an expression of anaphylaxis, because it points at once to the importance of realizing that in many cases at least an attack of asthma is simply a reaction to a certain substance. The primary principle is therefore to find the cause, if possible, and either remove it or remove the person from the sphere of its action. This is frequently difficult. In these days of automobiles, removal from the effluvia of horses is easy, and where such a patent reason exists such action should always be taken. I am sure we all have in mind many cases which have been completely relieved of their attacks by removal to other places than their original home, often without apparent reason for the cure. I know one man who lived in Kansas with perfect freedom from attacks. Return to Pennsylvania in the vicinity of Philadelphia caused terrible attacks of asthma. I have myself lost a pecuniarily valuable patient by a prescription of a sojourn at Atlantic City for the summer and fall when her asthma occurred, and an automobile during the rest of the year. She is perfectly well.

Removal to different climates, or different parts of the same country, are often beneficial, but frequently it is chasing an *ignis fatuus.* Doubtless the individual is manufacturing within his own body, and possibly in his intestinal tract, the intoxicating substance. Here diet is of the utmost importance. Continued and painstaking search should be made with the anaphylactic-causing substance in mind; this I believe may in many cases reveal the offending substance.

The diet of course should be regulated so as to avoid any indigestion, for the mere fact of indigestion will often apparently precipitate an attack. Certain individuals react to shellfish, berries, etc., which will bring about an attack of urticaria which is doubtless anaphylactic; they will also cause asthma frequently. For the same reason the

bowels should be kept as free as possible, in order that any poison which is eliminated may be rapidly discharged from the body, for as far as we know mere indigestion by a reflex action, which indeed may be anaphylactic, will precipitate an attack of asthma in a susceptible individual. It is a fact that careful regulation of the diet and attention to the functions of the gastrointestinal tract are frequently of the utmost prophylactic value.

There can be no question that in certain cases in the beginning, and in all cases after spasmodic asthma has lasted for some time, the attacks of asthma are precipitated by attacks of bronchitis. It is therefore of the greatest importance that such individuals be protected against recurring attacks of bronchitis. Where removal to a more equable climate than that of the central States is practicable, this should certainly be done, especially where a residence can be established which will not in itself furnish cause for attacks of bronchitis. When this is impossible, we should have the patient live where his surroundings are of the best.

Patients should be careful about exposing themselves to inclement weather when insufficiently clad. I thoroughly believe, however, that if one is careful that the body be well protected, both limbs and trunk, and especially the feet, he may go out in any sort of weather without contracting a "cold" or an attack of bronchitis; certainly he can sleep either in the open air or in a room with all the windows wide open without danger, provided he is well clothed and the surface of the body protected against chilling. Indeed, one of the very best methods both of prevention and cure of these attacks of bronchitis is an abundance of fresh air night and day.

Equally important is an avoidance of the close housing and ill ventilated, overheated sleeping and living apartments which are so commonly observed. I take it that if one could live continuously in a room of 70° without any reason to leave the apartment night or day, an attack of bronchitis might not occur, but such a life is as unthinkable as it is impracticable.

Asthmatics should avoid by all possible means close contact with persons suffering from common colds. Especially should they avoid such contact in close apartments, theaters, stores, etc.

Certainly common colds are communicable. An attack of a "cold" or the "grip" is a constant forerunner of an attack of asthma. The great importance of this part of the treatment is its preventive value. There is a vicious circle—asthma, bronchitis, bronchitis, asthma—until the patient is finally in the condition, presently to be described, of chronic bronchitis with emphysema, and in a constant asthmatic state.

Treatment.—Treatment of the attack is important. Once a patient is in the midst of an attack of asthma he must be relieved. I have nothing new to offer, but must perforce advise that which my own experience has justified. The old well-known hypodermic injection of ¼ grain of morphine with 1/150 of a grain of atropine will cut short most attacks. Meltzer believes that this action of atropine is that of relieving the spasm of the bronchioles by paralyzing the vagus, the spasm having its origin, according to Meltzer's theory, in anaphylactic shock. There is danger here of producing a morphine habit. The drug should never be given into the hands of a patient for self-administration. Hypodermic injections of adrenalin chloride will cut certain attacks short, due apparently to the effect upon the muscular tissue in the bronchioles, thus relieving the spasm.

In my own experience the action of adrenalin is not so certain as is that of morphine and atropine. Nitroglycerin used hypodermically, or amyl nitrate inhaled, will occasionally relieve the spasm.

Nitrate of potassium burned in the form of saltpeter and the fumes inhaled will frequently give relief. Saltpeter mixed with stramonium leaves and tobacco, half of the first to two of each of the latter, will give relief frequently. Stramonium and saltpeter are the basis of all the proprietary asthma cures. Cocaine sprayed in the nose will relieve attacks; it is scarcely a safe remedy. The most dangerous form of self-drugging is that of taking cocaine by the nose, which may easily result in a habit.

One of the most brilliant physicians of whom I know ruined his whole life and died prematurely from an overmastering desire for the drug contracted in this way. Internally, iodide of potassium is useful. I always give it between attacks, but in my hands it has fallen far short of being a specific, as it is said to be. Breathing into rarefied air is sometimes beneficial. Oxygen occasionally gives relief, but is in no sense a cure. Careful examination for sources of reflex irritation is a necessity. Nasal polyps, adenoids, inflamed tonsils are fertile sources of asthmatic attacks, and should be removed or treated where they exist.

Bronchitis, if it exists, should be treated as indicated in prophylaxis by an abundance of fresh air and proper clothing, and change of climate if practicable and necessary. Drugs must first of all embrace the tonics, strychnine and iron being the best of the group. These may be given in the following formulæ:

℞ Strychninæ sulphatis, .03;
Liquor ferri et ammon. acetat., 120.
M. S.: Teaspoonful every three hours.

The strychnine may be given as nux vomica in the following mixture:

℞ Acid. hydrochlor. dil., 8;
Tr. nux vomica, 16;
Elix. calisaya, q. s. 120.
M. S.: Teaspoonful every three hours.

Or the iron may be given in the form of Blaud's pills.

For the cough of the chronic bronchitis when there is much expectoration, eucalyptus in the form of globules, put up so elegantly by manufacturing firms, is useful.

Chloride of ammonia, citrate of potassium, and opium in some of its forms are all useful.

Frequently the heart begins to fail in these cases which appear to be simply chronic bronchitis, when rest and the administration in guarded doses of digitalis is demanded. After months or years, depending upon the severity of the attacks of asthma and also upon the amount of bronchitis accompanying them, emphysema, which is temporarily present in every case at every attack, becomes present with a constant dyspnea developing. Then the patient, to forestall the next attack of asthma, must perforce lessen its physical effects. If he does not he will soon develop cardiac dilatation with all its attendant dangers.

The first principle in the treatment of the cardiac dilatation is rest, but not necessarily in bed. When the area of cardiac dulness is much increased there is edema of the legs; then the patient *must be in bed,* until the decompensation is relieved.

I have here spoken of all the phases of asthma as I see them. It is an arduous task to treat a case. There is no specific as yet, but the conscientious care of the physician and the coöperation of the patient are necessary. No two cases can be treated precisely alike.

THE TREATMENT OF RENAL DROPSY.[1]

BY H. A. HARE, M.D.,
Professor of Therapeutics and Diagnosis in the Jefferson Medical College and Physician to its Hospital.

To discuss the various treatments which have been tried in all conditions of renal dropsy is impossible in the ten minutes allotted to my paper. I can only present certain views for your consideration and discussion. Physicians who have had experience in the treatment of chronic parenchymatous nephritis will certainly agree with me that its therapy is limited to the modification of annoying or dangerous symptoms, and that any hope of cure can only be held by those who lack knowledge of its course and pathology. Barring serious errors in diet and in exercise and exposure, I have come to the belief that we can do little to really delay the progress of the disease. Indeed, I go so far as to assert that often in the futile attempt to control the malady we may hasten the end and make the remaining days of the patient, inevitably

[1] A paper read before the Section of Medicine of the College of Physicians, March 24, 1913.

none too numerous, more miserable rather than easier. I am speaking now of true unmixed chronic parenchymatous nephritis, the large and small white kidney of the autopsy room.

Aside from the insufferable annoyance to the patient and his family of a rigid dietary, my experience has led me to believe that ordinary simple foods usually taken by people who live well, but plainly, are not only not harmful but useful. Foods which have been cooked a second time, if protein in character, or which are not fresh foods, even if classed as plain foods, are, however, deleterious, like sausage, scrapple, or game which has been "hung," as it always is, because in the period of delay by-products or early decomposition products are developed which lame kidneys cannot deal with. So, too, foods which are difficult of digestion and so are delayed for long in the stomach and bowel, by developing toxic matters, are to be avoided, but I am heterodox enough to believe that fresh red meats, like beef and good mutton, in moderate quantities, are not any more harmful than white meats, so-called, and there is nothing to show that they are except superstition. I am convinced that the total withdrawal of all red meats from one who has always used them is unwise, and I have frequently seen such cases improve materially in strength when put back upon such foods.

Given a patient who is losing much albumin daily in his urine and who is weak and anemic, the cutting down of his protein intake to almost zero, as is so often done, causes him to be robbed of nitrogenous matter by the physician and his kidneys. Indeed, in some respects a strict low protein diet in this form of nephritis resembles the strict non-carbohydrate diet in the treatment of diabetes. If the body is deprived of carbohydrates, in many cases it turns upon itself, converts fats and proteins into sugar, and in so doing produces by-products which are poisonous and hurries its own wasting. So in parenchymatous nephritis, when a fictitious gain in weight in nephritis, induced by edema, is removed by a purge and diuretics, we are amazed to find how greatly emaciated the patient has become, partly because he has been living on himself to compensate for a low diet.

But it will be said by those who advocate a milk diet in these cases that milk, being largely a proteid food, supplies enough protein nourishment. My reply is that it does not, for it requires not less than four to five quarts a day to provide sufficient calories for maintenance, and no one with impaired digestion and lame kidneys can deal with or get rid of this amount of fluid. If it is attempted, it induces biliousness, so-called, and this in turn prevents the liver from performing its poison-destroying functions and loads the blood with intestinal poisons which the kidneys, even when healthy, have difficulty in dealing with. In other words, I am pleading not that milk be excluded, or meat be excluded, but asserting that a simple mixed diet is rational. To advance views so heterodox will probably induce the very discussion that will prove perchance the best part of this conference.

The critical hearer will by this time have said, "Hare is not dealing with the theme of the programme, and is discussing nephritis, not the treatment of its edema," but I beg to state that I am leading directly to that goal when I protest against drenching his tissues with fluid or else starving the patient by lack of proteid food. My point is that nutrition must be preserved as far as possible to permit each organ of the body to do its work as well as it can and to protect the patient from infectious processes which are only too ready to end his days. There is not a man in this room who can live on milk for a month and be as fit and well as he is to-day. In other words, I believe that a mixed diet, which is comparatively dry, is essential in renal dropsy, only allowing those quantities of water needed for the maintenance of life, and by this term "quantity" I do not mean the amount he takes in health but the amount he needs to allay what the patient calls thirst. To put it differently, the patient's inability to handle proteins is not nearly so great as his inability to deal with liquid, yet how often do we

cut down the former and not regulate the fluid intake.

Next we come to the so-called salt-free diet, recently advocated in these very halls by Magnus Levy. The idea is that if we give salt the body will retain fluid to hold it in solution, so that the tissue fluids will remain normally tonic, and that this will result in increased dropsy. It seems to me that this is largely fallacious. At first glance it seems reasonable, but on study I think it unreasonable. If it be true, as it is, that the salinity of the tissue fluids is 0.9 per cent, then it is also true that any quantity of salt placed in the alimentary canal will stay there, and by the law of osmosis fluid will pass into that canal until the salt is diluted to 0.9 per cent, and tend to act as a purge, which is beneficial.

That the fluids of the tissues, even in dropsy, have approximately this percentage is proved by the fact that this proportion is essential to the life of the body cells, and that there is less than 0.9 per cent tonicity is further rendered unlikely by the fact that lame kidneys have not robbed the body fluids of salts but rather retained them. No factor in the body seems to be more closely guarded than the maintenance of this exact balance of tonicity. When salts are given they are not absorbed or are so hurriedly eliminated that the state of the blood is always the same, and even in nephritis the balance is not far from normal. In other words, to put my position briefly, to deprive a patient of all salt spoils his food, stops his appetite, disorders his digestion, and does not do any good unless his use of salt is excessive. The man that takes too much salt gets thirst, drinks an excess of water, dilutes the salt so that its solution is approximately isotonic with that of the tissues, and then gets rid of it so fast by free urination that the isotonicity is maintained. The man who has nephritis of the parenchymatous form cannot urinate it away, but he does not take up the salt unless his fluids need it. His excess of body fluid may demand salt, so that its tonicity may be maintained and so that his cells will not swell up and drown. For this reason he has no salt to use for his other needs, as in preparing gastric juice and in giving his kidneys their natural quantity with which to functionate.

This subject is closely associated with the use of purgatives for renal dropsy. Although their use often temporarily diminishes dropsy, the thirst of the patient whose tissues demand fluid to maintain the tonicity of their salts at the normal level at once results in suffering and the ingestion of liquid for its relief. After such a free purgation there is probably a better reason for withholding salt than at any other time for obvious reasons, and to use diuretics and purges simultaneously would seem unwise since if concentration is about to be induced by purging nature will not allow urination to rob it of fluid because a maintenance of 0.9 per cent is essential to the life of every cell.

May I say a word as to the abuse of Basham's mixture? Is it not true that this product of bygone days should be cast aside or used with moderation? That it is diuretic in some cases we all know, but if diuresis is all that is needed, why not use liquor ammonii acetatis without the iron. It is questionable whether the iron really combats the toxic anemia, and if it does, why not give it in sensible doses? There are only about 30 grains of iron in the body, yet Basham's gives in a few doses more than this to disorder digestion and to be stowed away as useless in the tissues. Iron in excess is also constipating, and constipation is a double evil in a nephritic. As a remedy for the anemia following acute nephritis it is useful, but for the inevitable anemia and fatal result of parenchymatous nephritis I believe it is as useless as in the anemia of cancerous cachexia.

This paper has already exceeded my time limit, and it may be said, "O Iconoclast! what wouldst thou we should do?" Without time to reply in detail I would say, drain excess of fluid by tapping serous cavities and by the use of Southey's tubes if the anasarca is really severe enough to interfere with function; modify water intake, but do not induce suffering by thirst, for the pa-

tient has not long to live, and life will not be shortened by moderate anasarca but will be by misery. If there is high blood-pressure relax the renal vessels with nitrites if possible; if it is low and the heart feeble, improve the circulation by digitalis, caffeine, and if the nephritis be really a chronic one, devoid of true inflammation, by theocin, in an endeavor to stimulate to increased activity such cells as can still functionate.

In many cases part of the dropsy is cardiac in origin, but as this paper does not deal with cardiac dropsy I shall not discuss in detail this phase of treatment.

ASTHMA IN CHILDREN.

BELLINGHAM SMITH in the *Practitioner* for June, 1913, in writing on this subject tells us that the drugs used for asthma fall for the most part under two headings: (1) Sedatives and hypnotics; (2) antispasmodics. In the first group are bromides, chloral, morphine, etc.; in the second are stramonium, iodide of potassium, lobelia, belladonna, grindelia. Others, like arsenic and calcium salts, have their advocates; the first probably acts as a nerve tonic, while the second owes its popularity to a supposed influence on the subjects of the so-called exudative diathesis. Recently, adrenalin, as a local astringent and vasoconstrictor, has been used with considerable success.

Drug treatment has also to be considered under two headings: (1) During an acute attack; (2) during the intervals. Smith has tried to point out the inadvisability of merely waiting for an attack, and then treating the paroxysm with the fumes of burning stramonium and nitre, the injection of adrenalin, or by various inhalations, like pyridine.

It is impossible to enter into the many lines of treatment. Personally, if the attacks occur only at night, Smith gives a regular mixture of potassium iodide, belladonna, and ethereal tincture of lobelia, to be given at bedtime. It is safe to give ½ grain of iodide for each year of life, 2 to 10 minims of tincture of belladonna from infancy to ten years old, and lobelia in minim doses for every year of life up to 5 minims. If the attacks occur by day and night, Smith has no hesitation in giving the same prescription in rather smaller doses, three times a day. He thinks iodides will be found the sheet-anchor in this disease in early life; when they fail, in his experience, it is rare to get relief with other drugs.

One word of warning! Iodides should be given regularly for a few weeks, six to eight, and then left off for a fortnight and replaced by a tonic, such as arsenic, in the interval; then the course of iodides can be renewed. In this way, he thinks, it will be found that the iodide will retain its effect much longer. He has used the liquid extract of grindelia recently, and thinks, perhaps, there is a little improvement where other drugs failed. Calcium, he is satisfied, does not do much good. It may be given as the syrup of the lactophosphate, or as calcium chloride. With the calcium he has lately combined 4 to 5 minims of adrenalin, and some parents seem to think distinct relief was gained from this mixture.

In an acute attack in an infant, hot baths, as in convulsions, seem to have a sedative effect, and some folk will swear by the old-fashioned steam kettle, the steam from which may be medicated in various ways. An injection of 3 to 5 minims of adrenalin (1:1000) can be given. If the child is very bad, nascent oxygen, and, perhaps, a very small dose of morphine sulphate, 1/30 grain, may be given. Smith has never made use of that drug in asthma, and he never uses any of the sedatives, except, perhaps, a little bromide or phenazone when the child is definitely hyperexcitable.

Finally, drugs must not blind us to the necessity for properly regulating the child's habits of life, clothing, diet, etc. The author reminds us we have all met the child dressed in two vests, three shirts, and two flannel-lined waistcoats, or the unfortunate little patient who is never taken out in the winter because whenever he goes out in the cold he catches a chill. Such follies should be corrected firmly but tactfully.

EDITORIAL.

THE VALUE OF MUCUS AS A PROTECTIVE FACTOR IN DISEASE.

We are prone to think of excessive mucous secretion from mucous membranes as being abnormal, and if abnormal therefore harmful and worth correcting, but it is very questionable whether this conclusion is entirely correct. Those who are interested in this subject will find an extremely interesting and able lecture in the *British Medical Journal* of March 29, 1913, by Mr. Charles J. Bond. He deals with the extension of infections by the mucous membranes and the blood stream, and gives a large amount of information concerning infections which take place against the current produced by secretion of various glands. There can be no doubt that in many instances ascending mucous currents disseminate infection, although the general trend of the current may be against such a spread, as, for example, the extension of infection upward in the intestine as when infection of the small intestine results from appendicular disease. The same thing also takes place in infection of the gall-bladder, the biliary and pancreatic ducts by various organisms, notably in the case of typhoid carriers.

It is, however, chiefly with his remarks as to the influence of mucus on the growth of microörganisms and the part played by mucus in the protection of epithelial cells that we particularly wish to deal. Bond reminds us that although it has been shown that pure bile injected into the pancreatic duct produces acute pancreatitis, Flexner has also shown that if the bile is previously mixed with mucus, such pancreatic lesions fail to occur. This leads to the belief that an investigation as to the influence of different kinds of mucus secreted by different kinds of epithelium on different kinds of pathogenic organisms is a subject which would well repay investigation. Bond asserts that he has shown that certain forms of mucus distinctly inhibit the growth of bacteria. It is well known that the gonococcus which grows so readily in urethral mucus fails to reproduce itself in the mucus of the mouth, and it would be interesting to know whether microörganisms in the urine would grow as well in intestinal mucus as they do in bladder mucus. It is true of course that the bacillus coli frequently infects the urinary tract, but apparently this occurs only when certain pathological changes have taken place whereby the ordinary protective processes are impaired.

There can be no doubt that a layer of mucus protects epithelial cells from mechanical and chemical irritation. It is possible that the mucus which is poured out by the epithelial lining of the bronchial tubes during the early stages of acute bronchitis, and which is very viscid, is designed to protect the epithelium from the attacks of microörganisms. Indeed, it seems to be true that in the early stages of all acute inflammations the mucus secreted is viscid and glutinous, as, for example, in acute inflammation of the bladder. After the acute stage of the infection has passed by the mucus changes its characteristics as to pus, organisms, and dead epithelial cells, and helps carry off detritus which has arisen from the acute inflammation.

An interesting side-light upon the use of mucous secretion is quoted by Bond, who states that the green woodpecker secretes mucus of a different kind according to the object in view when seeking food. Its tongue becomes glutinous by reason of the secretion of an extremely viscid mucus which serves to stick insects to the tongue; whereas by other glands it secretes ordinary non-viscid lubricating mucus when the lubricating effect is desired, and the food is to be swallowed. Taking it all in all, Mr.Bond's lecture is one of the most interesting that we have read for a long time. Any one who is fortunate enough to obtain this issue of the *British Medical Journal* will find much pleasure in its perusal.

SYDENHAM AND MODERN THERAPEUTICS.

It can probably be asserted without much danger of contradiction that when as many years have passed from our time as have passed since the days of Sydenham, our successors will regard our methods as crude as we now think were those which he employed, and it is interesting to remember that the dense ignorance of his time gave room for a large amount of erroneous deduction on the part of men who were nevertheless perfectly honest in their mental processes and in the methods which they employed. As is well pointed out in an interesting article contributed by Chisholm to the *Journal of the American Medical Association* of March 22, 1913, Sydenham of course had no clinical thermometer or stethoscope, and urinary analysis went no farther than the exercise of the sense of taste. There was no general recognition of the significance of the pulse-rate, there was no knowledge concerning the relation of the blood stream and the kidney, for Ent asserted that the urine was not borne to the kidneys through the veins but through the nerves.

Those who most admire Sydenham and know most about him are forced to admit that while free from superstition he nevertheless had odd views on medical subjects. It is also evident that he possessed many of the factors which are as essential to success in 1913 as they were in 1666 when his book on "Fevers" appeared. He watched his cases carefully, studied them closely, and reached deductions concerning them which were more accurate than his colleagues. Furthermore, he had enthusiasm tempered by judgment, and in these days when we are beginning to fully appreciate the reparative power of the body if we will give it only a chance, it is interesting to note that Sydenham used these words: "We have good reason for believing that there are certain sorts of fever which Nature cures by a way of her own;" and again, "Efforts must be to assist Nature in the proliferation of the morbific matter, in her own way and after her own fashion;" and still again, "I often think that we move more hastily than we ought to do and that more could be left to Nature than we are at present in the habit of leaving her. To imagine that she always wants the aid of art is an error." Finally, and perhaps most remarkable of all his observations in view of the investigations made by modern pathologists, he wrote this pregnant line: "A fever is Nature's engine which she brings into the field to remove her enemy."

That Sydenham's views, so extraordinarily prophetic, were nevertheless controlled by human frailties is indicated, however, by some of his other statements, for in the face of observations made by Malpighi with the microscope he wrote: "We may know the larger organs of the body, but its minute structure will always be hidden from us. No microscope will ever show us the minute passages by which the chyle leaves the intestine, nor those by which the blood passes from the arteries to the veins." Nor did he appreciate the value of Harvey's discovery of the circulation of the blood. Indeed, he thought that the practice of medicine had little to do with the discoveries of anatomists and physiologists. If, however, medical men of to-day who are fond of employing antipyretic drugs in combating fever will remember what he said concerning the subject of fever, they will be better practitioners.

Last of all it is interesting to note a reprint which Chisholm quotes from Sydenham concerning the value of opium. What he said of it then largely holds true to-day, and the quaintness of his language in no way impairs the force of his statements:

> And here I cannot but break out in praise of the great God, the giver of all good things, who hath granted to the human race, as a comfort in their afflictions, a medicine of the value of opium, either in regard to the number of diseases that it can mitigate, or its efficacy in extirpating them! So necessary an instrument is opium in the hands of a skilful man, that medicine would be a cripple without it; and whoever understands it well will do more with it alone than he could well hope to do with any other single medicine. To know it only as a means of procuring sleep, or of allaying pain or of checking diarrhea, is to know it only by halves.

POISONING BY PRUSSIC ACID.

The fact that prussic acid produces death with remarkable rapidity after it is ingested has caused it to be regarded as one of the most virulent poisons known. Indeed, it has been stated that if an individual survives twenty minutes after swallowing a dose he will probably get well, since by that time he will have passed through the most dangerous portion of the poisoning. As with all poisons the severity and suddenness of onset of the symptoms will vary somewhat with the condition of the stomach at the time that the poison is swallowed, for if food and drink are present in large quantities it naturally will not be absorbed with the speed that would be present if an empty stomach received the drug. On the other hand, the great volatility of prussic acid causes it to be less influenced by the condition of the stomach contents than less volatile poisons.

Recovery occurs so rarely when a dose of any size is swallowed that a case reported by Bourke in the *Journal of the Royal Army Medical Corps* for March, 1913, is of interest. He states that a private soldier attempted suicide by swallowing 2 drachms of the dilute hydrocyanic acid of the British Pharmacopœia. Almost immediately he fell to the floor in a rigid, doubled-up condition, with struggling respiration followed by convulsions, loss of pulse at the wrist, intense congestion of the face, dilated pupils, and, at times, the breath smelling strongly of the poison, arrest of respiration for some seconds. The patient was treated by the administration of an emetic, artificial respiration, a hypodermic injection of 1/80 grain of atropine, and inhalations of nitrite of amyl. As the emetic did not act well, a stomach tube was tried, without effect so far as withdrawing the stomach contents were concerned, but on withdrawing the tube there was slight vomiting. Repeated doses of iron and magnesia carbonate were given, for what reasons we do not know, as this is the antidote for arsenic. Repeated attacks of convulsions with muscular rigidity and foaming from the mouth ensued. Hypodermic injections of atropine with inhalations of amyl nitrite were followed on each occasion by improvement in the pulse and by more natural breathing. Two hours later the patient became conscious and made a rapid recovery.

The statement that he swallowed 2 drachms of the dilute acid, combined with the fact that a 2-drachm bottle containing only two or three drops of liquid smelling strongly of prussic acid was found by his side after he became unconscious, aids Bourke in believing that 2 drachms were actually taken. Stevenson states that the largest dose from which an adult has recovered was one reported by Burman in the *Lancet*. In this case one fluidrachm of dilute prussic acid was taken by mistake. Consciousness returned within half an hour, followed by quick recovery. He also asserts that when the dose is 2 drachms and upwards, death takes place in from two to ten minutes. The recovery of the case reported by Bourke is, therefore, all the more remarkable.

NITROUS OXIDE SLEEP AND NORMAL SLEEP.

A large amount of work has been done by pharmacologists to determine the effect of anesthetics upon the brain cells and other portions of the nervous system, and as is well known it seems to have been proved that when ether or chloroform is given the lipoid contents of these cells is temporarily put in solution. Recently Crile and Austin (*Journal of Pharmacology and Experimental Therapeutics*, March, 1913) have reported their investigations upon nitrous oxide sleep as compared with normal sleep. They first determined the effect of prolonged wakefulness upon brain cells. They state that under these circumstances the physical changes in the brain cells are characteristic of those of overwork, surgical shock, and emotional exhaustion. They make the interesting observation that if nitrous oxide anesthesia is substituted for sleep and yet the animal during the anesthesia is constantly agitated, the changes

previously noted do not occur, the brain cells being protected almost wholly against such exhaustion. On the other hand they found that after an animal has been kept awake for a long period of time until such changes in its brain cells occur, a period of sleep produced rapid recuperation unless the condition of the cells was one of profound exhaustion before sleep developed; when this was the case a single period of sleep was not sufficient to reëstablish a normal state. Another observation made by them, which is of very considerable interest, is to the effect that although, as just stated, the use of nitrous oxide seemed to protect the brain cells from wear and tear, nitrous oxide unconsciousness does not produce recuperation in the brain cells in the way in which natural sleep induces it. In other words, if nitrous oxide sleep is induced instead of normal sleep, after a period of brain cell exhaustion, an examination shows that the cells have improved but little in their condition.

INTRAVENOUS NARCOSIS.

The safety and efficiency of ether and nitrous oxide when administered by those specially skilled in anesthesia, and perhaps the majority of the larger clinics, the habitual employment of experts rather of interne residents as anesthetists would seem to have established so firmly the claims of these standard agents that a further search in regard to the bettering of either the agent employed or its method of administration would seem unnecessary. That this is not the case is shown by the increasing employment of intravenous narcosis, which dates back at least forty years.

Keppler and Breslauer (*Deutsche Zeitschrift für Chirurgie,* 1913, cxx) after a general review of the subject of anesthesia by intravenous injection quote Ritter as the discoverer of the fact that by directly injecting into the blood cocaine or its derivatives it is possible to anesthetize without producing a general toxic effect upon the whole central nervous system; they regard the employment of such drugs as uncertain in their effect and dangerous. In considering the ideal intravenous injection they think that it should consist of a single dose of small bulk which should contain a chemically inert narcotic, exhibiting a specific effect upon the brain without other influence. It should be possessed of but slight toxicity and should be rapidly eliminated. With this idea in view they conducted an elaborate laboratory research, rejecting ethyl bromide, nitrous oxide, and ethyl chloride as possessed of too low boiling points. They found that trional or paraldehyde causes sleep which lasts two or more days. Amyl hydrate caused nervousness and clonic cramps. Chloral, formamid, sulphonal, and veronal dissolve with great difficulty. The sodium salt of veronal is too dangerous because of the paralytic effect on the medulla. Urethan and hedonal had to be given in doses entirely too large to be safe; urethan caused infarcts in the kidney in one instance. The bromides are too weak.

Experimentally they had best results from pantopon, using about ¾ to 1 cg. per kilo of body weight. This is readily dissolved. There were no after-effects and narcosis passed off promptly, the cerebral functions being abolished long before the reflexes were materially blunted. Application of this drug to the human was practically unsuccessful. There was not sufficient degree of analgesia. Postoperative sleep lasted for many hours. Their research, though useful in pointing out the drugs to be avoided, seems to have no direct practical application.

Noel and Souttar successfully employed in a limited number of cases paraldehyde, 5 to 15 Cc. of paraldehyde with an equal amount of ether being dissolved in 150 Cc. of cold one-per-cent salt solution, this whole quantity being injected in about fifteen minutes. A condition resembling normal sleep is invariably induced in one minute, nor were there any after-effects. It seemed particularly applicable to acute and chronic alcoholics, and was used rather for its hypnotic than its analgesic effect.

The intravenous ether administration

given in five-per-cent solution much as is given an ordinary venoclysis, though still in its experimental stage, has uniformly given such good results that it is a method to be seriously considered when the ordinary inhalation method is not applicable. It is practically always preceded by morphine and atropine or pantopon and scopolamine or other hypnotic injection. The apparatus is extremely simple, nor is the elaboration designed to keep the solution warm of any particular service. Satisfactory anesthesia is produced by a very small quantity of ether. No irritating after-effects have been noted upon the kidneys, and a number of surgeons have become enthusiastic converts as to its safety and efficiency. That it is likely to become a method of choice, however, seems highly improbable.

PROPHYLAXIS OF SYPHILIS.

In this relation some editorial remarks in the *Edinburgh Medical Journal* for May, 1913, are particularly pertinent. In the course of the delightfully sane comments on the subject the writer states that the administrative control of the future, which will involve notification, treatment, and possibly segregation, must be medical, not through any *police des mœurs,* and to be effectual must apply to both sexes. Syphilis must be envisaged as an infectious disease, and must be dissociated so far as possible from questions of ethics or retributive justice.

Administrative control can only exist in virtue of a favoring public opinion, and public opinion can only be aroused by education. It is the duty of the medical profession to speak plainly to the public, and then the responsibility will rest on them. It is necessary, above all, that young men be acquainted with the risks of syphilis, and that appeals should be made to them on hygienic as well as on ethical grounds. The hard fact has to be remembered that the moral argument applies very unequally, since not all, by any means, have to face the same temptation, while the argument of health appeals to all alike. Moreover, only by keeping ethics in the background can we avoid branding innocent sufferers, and they are many, with the added stigma of disgrace. The frame of mind in which Lecky wrote of "the unhappy being whose very name is shame to speak" as "the supreme type of vice, she is ultimately the most efficient guardian of virtue," befits the historian of morals but not the sanitary reformer.

An educational propaganda, besides guiding public opinion as to the requisite measures, would directly lessen syphilis. This is not mere conjecture; we have the experience of the Indian army on our side. In 1896 the admission ratio per 1000 for venereal diseases was 511, for syphilis 97; in 1910 it was 58 and 14 respectively. The improvement is due to two causes—the cantonment regulations of 1897, and a series of advisory memoranda issued by successive commanders-in-chief, inculcating temperance and self-control. It is the opinion of those best qualified to judge that the instruction and advice given to young soldiers under these memoranda have been as instrumental as the regulation of prostitution.

Robertson (*ibid.*) in the course of a lecture on "General Paralysis of the Insane—Its Prophylaxis and Treatment," notes that the first step to be taken for the prevention of general paralysis is the thorough treatment to complete recovery of the attack of syphilis. The earlier this is begun the more likelihood is there of attaining success, for primary syphilis is more curable than secondary, secondary than tertiary, and tertiary than latent syphilis. Cure, too, is tested, not by the disappearance of all visible manifestations of the disease, but by a permanently negative Wassermann reaction, for anything else is futile. One dose of salvarsan or a course of mercury may cause a skin eruption to disappear completely without curing the disease or influencing the Wassermann reaction in the blood at all, and we know from experience that most of those who develop general paralysis suffer from latent syphilis presenting no visible signs.

The employment of the Wassermann reaction as a test of recovery from syphilis is possibly its most useful service, for the chief cause of the tragedy of the past was the absence of such a test, one-third of the patients treated not having been cured of their disease. The evils resulting from this we are only now beginning to realize, and they include not only general paralysis and tabes, aneurism, and aortic disease, but many other organic and nervous diseases with an obscure etiology. Sufficient time has not elapsed to enable any one to say that a complete cure of syphilis by salvarsan with a permanently negative Wassermann reaction will prevent the development of general paralysis, but it is reasonable to think so.

In a third to a half of the cases of tertiary and latent syphilis the Wassermann reaction continues positive in spite of antisyphilitic treatment (Boas), and in these prophylactic measures must be adopted. In all cases with a persistent positive reaction in the blood the cerebrospinal fluid should be examined, because Dreyfus found in 80 per cent of his cases of primary and secondary syphilis, irrespective of the presence or absence of any symptoms pointing to involvement of the nervous system, a lymphocytosis of the cerebrospinal fluid, which varied with the efficiency of the treatment and the course of the disease.

As to the treatment with a view to cure, it must be recognized that the disease itself is subject to extraordinary remissions, arrests, and attenuations. Robertson has employed intravenous injections of salvarsan, intraspinal injections of antisyphilitic serum (the latter being obtained from patients suffering from the secondary stages of syphilis, who had three days earlier been given an injection of salvarsan), the intraspinal injection of salvarsan serum collected from the patient himself, urotropin, and calomel. The results obtained by the treatments were disappointing, though most patients improved. In none of the patients did the Wassermann reaction become negative, but in a number there was a distinct diminution of the intensity of the reaction. Roughly speaking, half the cases evidenced improvement as regards the Wassermann reaction and lymphocytosis. Signs of the activity of the disease process have been diminished. Robertson considers that the results attained in other forms of syphilis by large and repeated doses of arsenic and Noguchi's discovery of spirochætæ in the brain of those suffering from general paralysis have completely changed our point of view concerning the method of treatment to be employed. In syphilis of the nervous system Dreyfus recommends the total administration of 6 to 9 grammes of salvarsan, injected in doses of 0.3 to 0.4 gramme twice a week for a period of eight to twelve weeks. This is four times the quantity, administered eight times more rapidly than was the author's practice. If the reaction after each injection be severe, the succeeding injections should be delayed till the temperature has fallen. In addition to this enormous dosage of salvarsan he recommends the employment of mercury, but even this vigorous and combined treatment had no permanent effect on general paralysis, though he claims to have benefited tabes. One wonders whether the injection of salvarsan serum intraspinously in addition would have made a difference, or whether the administration of twice or three times the quantity of salvarsan would not finally have had some arresting effect on general paralysis.

Although success has not been attained there are hopeful indications, for it appears that the disease process, if not suppressed, is at least touched in half of the cases. The decrease in the lymphocytosis, the diminution in the intensity of the Wassermann reaction, and its disappearance for over a year in some cases are hopeful signs of the most convincing and satisfactory kind.

The therapeutic problem before us is as to whether we are justified in pushing the antisyphilitic treatment to the extreme. General paralysis is as desperate a disease as any cancer, for 50 per cent of those suffering from it die in one year, 75 per cent in two years, and 90 per cent in three years, and the existence of the few who survive

this period is a living death. Are physicians justified in treating syphilis by pushing arsenic to the most extreme limits compatible with survival in the hope of curing their cases? If so, there would certainly be a distinct percentage of deaths. No one, however, can assert with confidence that a single case would recover.

The one clear fact is that syphilis should be treated when it is possible to cure it; that is, in its early stages when the diagnosis is certain and the prognosis excellent. It would be a reflection on the medical profession if the seeds of general paralysis and tabes are permitted to remain in the human soil until it is too late.

REPORTS ON THERAPEUTIC PROGRESS.

SOME EXPERIENCES WITH SALVARSAN.

In the *Australasian Medical Gazette* of March 1, 1913, BUCHANAN reports his experiences with salvarsan.

The following remarks on salvarsan are based on his observation of some 67 cases which he has treated in this manner. In all his cases, except the last four or five, salvarsan was used, and in these last cases neosalvarsan was the drug employed. In each case he has given salvarsan intravenously. His chief objection to salvarsan is that when a single dose does not cure—as it sometimes does not—so wonderful are the immediate results that the patient is often deluded into the belief that he is cured, and so neglects further treatment. It was impossible until recently to obtain a Wassermann test in Brisbane, and even now the expense of such a test often prevents one from having this test done. Consequently, in most of his cases, a Wassermann has not been done, and so, he asserts, he cannot speak of cures, only of apparent cures, but that is the only way in which one can speak of any treatment of syphilis unless a Wassermann has been done. He does not give a table of cases and results, but speaks only of cases in which the results were unusually successful, or in which the salvarsan failed. All the other cases he counts as apparently cured. In his small series, one case developed the primary sore whilst he was under treatment. It was for soft chancre and bubo. He first saw this patient with a soft chancre, and a suppurating bubo, which he opened. Two weeks later another chancre developed, followed in another two weeks by a sore throat and a secondary rash. He received an injection of salvarsan, and in one week the rash and sore throat had disappeared, and, strangely enough, the bubo had healed in another three days; the hard chancre had healed. He received a second injection, and is now having mercury.

The most marked amongst the secondary cases was a woman, who had had a rash for six weeks, and when he first saw her she had in addition a stinking ulcerated throat; indeed, so bad was the smell that the other patients in the small ward objected to her presence. Three days after receiving an injection the rash had faded, the throat had healed, the smell gone, and one week after the injection she was apparently well; indeed, she felt so well that she refused further treatment, and now, twelve months later, is still apparently well.

The most interesting results occurred amongst the tertiary cases. His very first case was a man who had been under mercury and mercury and iodide of potassium for two years. When he saw him first he had two holes in his palate, with ulcerated edges, and he had a foul smell coming from his mouth. Three days after his first injection the smell had gone, the ulcers had healed, and although the holes remained they were reduced in size. He received two more injections, and now, two years later, is apparently quite well.

Another interesting case was a woman, who had been under mercury and potassium for some years, and when Buchanan

saw her she was quite blind in one eye, and had very defective vision in the other eye; in addition she had a badly ulcerated throat, and suffered great pain in the eyes. He was very diffident about giving salvarsan in this case, but the patient agreed to take the risk. Seven days after the injection her throat had healed; she could see the lattice-work on a veranda with the bad eye; the other eye had improved, and her pain was gone. Twelve months later, although her sight improved no further, she was otherwise well. She had in addition six months' mercury treatment. She was the only patient to whom he did not give the full dose of salvarsan.

Perhaps the most interesting cases are two of typical locomotor ataxia. The first case after injection was very sick, and remained in bed for six days; and Buchanan remarks that this is the only case which he found it necessary to keep a patient in bed for longer than twenty-four hours. The patient then made a very rapid improvement; he discarded his sticks, he could read, his diarrhea and bladder symptoms left him, also his crises; but his knee-jerks remained absent. He gradually went back to his old condition, although he received mercury and potassium iodide, and as he refused further salvarsan, Buchanan has not seen him since.

The second case of locomotor ataxia was so bad that previous to giving salvarsan Buchanan had a consultation about him. After the injection he became quite insane for three days. He had most quaint hallucinations of battles being fought in the next room, etc. After that period he made a most remarkable improvement; his bladder symptoms disappeared—he had had complete incontinence; his gait and sight improved, and his pains left him. He received a second injection ten days later, and again he became insane in just the same way for three days. After this he further improved in each direction, and walked up and down the steps at Buchanan's house without a stick. He then went on to mercury, and when seen three months later he had resumed his usual occupation, and he informed me that his sexual powers had returned—a statement which his wife confirmed.

The only cases in which Buchanan saw no beneficial results were those in which salvarsan had been given intramuscularly and allowed to remain at the site of injection. He had two cases; each patient had had two intramuscular injections before he saw them, and the lumps were present at the site of the injection some months after receiving the injection. He gave each patient an intravenous injection, but obtained no result. He treated one other man who had had an intramuscular injection near his scapula; the mass had broken down, and a tough black mass presented in an ulcer 3 by 2 inches. He waited in vain for this mass to slough out, and finally excised it. It was the toughest tissue he had ever met with. This patient had had hemiplegia, and despite mercury and potassium iodide, he suffered from intense basal headaches. He waited for the old salvarsan ulcer to heal, and then gave him an intravenous injection. In a week he said he felt well. He received a second injection in ten days, and now, four months later, he says he feels well. He is still on mercury.

In one other case in which an intramuscular injection had been given he failed to get a good result. This patient took mercury for eighteen months after infection; he then went to Sydney, and as he gave a positive Wassermann he received an intramuscular injection of salvarsan. He came to Buchanan with some tertiary spots on his arms and legs, and a lump in the buttock at the site of his intramuscular injection. He was given two intravenous injections of salvarsan and three months' inunction of mercury, and yet he gives a positive Wassermann.

The last case mentioned is a man with tertiary spots, to whom Buchanan gave one intravenous injection. He cleared up at once, but returned in twelve months' time with some tertiary manifestations. Another injection was given; this was followed up with mercurial inunction, and in five months nothing further has developed.

All the other cases, which include rashes, ulcers, one completely eroded soft palate, lesions of the tongue, etc., are, as far as Buchanan knows, quite well; at any rate, they all gave an immediate and wonderful reaction. Indeed, the patient whose soft palate had completely disappeared, and whose hard palate was becoming involved, showed a clean, healed mouth in thirty-six hours—of course, minus his soft palate. This patient gave a six years' history of previous treatment.

One case of anemia treated with salvarsan showed immediate improvement, and then drifted back to the old condition. If treating anemia again Buchanan asserts he would either give repeated small doses or else give it intramuscularly, as he thinks the arsenic is not retained long enough when only one intravenous injection is used.

Although Buchanan did not give the injection, he knows that salvarsan used in one case of filaria, at the suggestion of Dr. Jackson, caused no improvement. Indeed, the pathological report indicated that the embryos were more numerous after the injection than before. This result seems to be of some interest, as indicating that the selective action of "606," aimed at and claimed by the originators of the treatment, is sufficient to exclude from its action even such low forms of metazoa as filarial embryos.

He began by giving only one injection; he now gives two or three at intervals of ten or twelve days, and then follows with six months' mercury. Of course, in the absence of a Wassermann test, he has had to rely on clinical evidence in most of his cases, but in two cases in which this last course was adopted a negative test was obtained.

An observation which is of interest, in view of recent suggestions in the literature, that "606" may be toxic to spermatozoa, is the fact that within a few weeks of receiving a large and effective dose of salvarsan one of his cases impregnated his wife; though now four months' conception, the pregnancy still appears normal.

THE TREATMENT OF ALIMENTARY TOXEMIA.

In the *Lancet* of March 15, 1913, HALE WHITE writes on this interesting topic. He says that if it is allowed that ill-health is due to alimentary toxemia caused by bacterial changes the best treatment would be to stop the ingestion of the offending bacteria, but as we do not know what they are we cannot do this; or to give intestinal antiseptics, which experience has shown to be of limited use, although Hale White thinks their uselessness has been exaggerated, for occasionally cyllin seems to do good; or to alter the medium in which the bacteria grow, which is successful when we cure children by diminishing their carbohydrates; or to give other microörganisms which will render difficult the growth of the offending microörganism (this is the principle of the sour-milk cure, from which much was hoped, but which has been disappointing); or if there is delay in emptying the intestine, to overcome this.

The last is the commonest mode of treatment, and thousands of people keep themselves in good health by natural aperient waters or some other simple aperient, either food or drug. Abdominal exercises and massage will, if properly carried out, cure many a case of constipation which has resisted all other methods, and the same may be said of a visit to a hydropathic institution or a spa which lays itself out for the treatment of this disorder. Lately some surgeons have been trying to limit the formation of poisons in the intestines by preventing delay by performing an ileosigmoidostomy either with or without excision of the colon. When these cases are reported we are always assured that all medical means has been adopted without benefit, but we are never told what the medical means were. It would add greatly to our knowledge if our surgical friends would give precise details of the medical treatment, the patient's statements being corroborated by the various medical men who treated her. A suspicion comes into one's mind sometimes that perhaps some surgeons do not know all the means the physician has at his

command for the treatment of delayed action of the bowels. Some have opened the appendix and washed the bowel through from the appendix to the anus; if the stasis is in the small intestine this operation will not be of much use, but the success which may follow it when performed for colitis is so brilliant that when the stasis is in the large bowel much benefit might be expected. One thing is certain, namely, that if surgical interference is ever necessary the patient for whom it is necessary is a reproach to her medical advisers, if she has consulted any in the early period of her illness, for the condition never ought to be allowed to advance to the stage which requires surgery, and although no other operation may be feasible, yet short-circuiting and opening the appendix are only makeshifts, for neither removes the cause of the intestinal stasis.

It is too early to speak definitely as to the results of these short-circuiting operations. Hale White, like some others, has seen some women who are not in the least better for having had it done; on the other hand, many successes have been reported, but sometimes more than one operation has been required, and sometimes aperients are still necessary after the operation. It would be a good thing if some of these cases were more fully reported; photographs before and a year after the operation would be useful, and the patients who had been operated on, whether successfully or not, might be demonstrated with advantage. It is desirable to have the after-history of every case that has ever undergone operation, for it may be that any improvement that ensues is not permanent; this is especially important, as many of the subjects of operation are neurotic women, and we all know that the immediate effects of operation on them may be extraordinary. Further, it is unfortunate that the most frequent symptom—namely, pain—is subjective.

In this brief survey Hale White has tried to indicate the direction which future work should take, and if he has seemed hypercritical it is only fair to remember that friendly criticism can do no harm. Our interest in alimentary toxemia has been awakened by the fascinating suggestions of Metchnikoff and by the bold extension of them by Mr. Arbuthnot Lane, but it is an approved principle of science that the results of one worker cannot be accepted until confirmed by others. We ought, therefore, to withhold our verdict on many points until we see whether confirmation is forthcoming. In the year 600 A. D. Isodorus Hispalensis, Bishop of Seville, wrote: "For a medical man should know the *ars rhetorica,* that he may be able to support with sound arguments the matters which he deals with; and also the *ars dialectica,* so that by the exercise of reason he may investigate the causes of sickness for the purposes of cure." That is as true now as then.

TREATMENT OF CARBUNCLES, BOILS, STAPHYLOCOCCIC INFECTIONS, AND CERTAIN STREPTOCOCCIC INFECTIONS BY LARGE DOSES OF DILUTE SULPHURIC ACID B. P.

Reynolds writes in the *Lancet* of March 15, 1913, upon this phase of treatment. He says it must be clearly understood that this article only deals with the clinical side of the subject. As regards the experimental investigation, the authors state that it is now being followed up, and it may be dealt with in a further communication. He has used this remedy in such cases for many years with uniform success. From letters received from medical men in different parts of the country it appears that they have experienced the same satisfactory results.

The treatment consists in administering internally dilute sulphuric acid B. P. in 20- or 30-minim doses, each dose diluted with two ounces of water, every four hours.

In the case of carbuncle treated by this drug in large doses (small doses are not of the slightest use), changes are observed to take place in the following order: First, within twenty-four hours the infiltrated area of tissue becomes strictly circumscribed; then the slough is observed to

soften; during the next few days pus is freely discharged, and the whole affected area shrinks and healthy granulation tissue forms, filling up the cavity until the part is healed. The cicatrization takes place in a comparatively short time from the commencement of the treatment, the period varying, of course, with the size of the lesion.

The only external application is a dressing of carbolized vaselin (1 in 20).

Naturally in cases of what would appear to be streptococcic infection, such as those resulting from abrasions, or punctures by bones of high game, or inoculation by decomposing animal matter, the patient showing early symptoms of septicemia, a somewhat different though favorable course obtains; the high temperature is quickly reduced and the pain and swelling and malaise gradually subside, the patient progressing uninterruptedly toward convalescence. Where the lymphatics are inflamed and the glands enlarged and painful these conditions in a few days also disappear.

The author has treated in the same way in the past a very large number of similar as well as of milder cases—*e.g.*, blind boils, which are aborted and completely disappear. Recurrent crops of boils and pimples in different parts of the body and severe cases of acne have yielded readily. In one case in particular, where the patient developed recurrent crops of boils, the drinking-water was found to be taken from a very foul cistern with dead animal and vegetable matter covering the bottom.

The remedy proving so effectual in such classes of cases as he has mentioned, he was naturally led to try its effect on other conditions where pyogenic organisms were responsible for some of the symptoms observed. Cases of bronchiectasis and pulmonary tuberculosis, in which there is so often a staphylococcic infection, he has found to be benefited; the sputum becomes less purulent and much less in quantity, and in tuberculous cases the fluctuations of temperature are less.

From the above it seems evident that this remedy has a wide sphere of usefulness, and experiment and observation alone will show in the future how far the many lesions caused by pyogenic organisms can be successfully treated in this way.

THE TREATMENT OF AMEBIC DYSENTERY WITH SUBCUTANEOUS INJECTIONS OF EMETINE HYDROCHLORIDE.

LYONS writing in the *Journal of the American Medical Association* of April 19, 1913, thus describes the advantages of emetine treatment. He asserts that the treatment of amebic diseases with emetine rests on an experimental basis. It has been shown that ipecacuanha without emetine has but little effect on amebæ *in vitro* (as well as clinically), while emetine has a most powerful amebicidal action. Granting this, then we may assume that emetine is the active principle of ipecac so far as amebæ are concerned, and theoretically should be used in preference to the whole drug in the same manner as we employ quinine for the treatment of malaria in preference to cinchona. According to Rogers a third of a grain of emetine is equivalent to 30 grains of ipecac. The soluble salts of emetine are put up by several pharmaceutical houses. The hydrochloride, to which Lyons's experience is limited, is practically non-irritating when used subcutaneously, and in moderate doses causes no nausea, vomiting, or depression. Rogers's largest dose was 3 grains in one day. Allen injected 4 grains at one dose and produced nausea for several hours—the patient vomiting once. Rogers has given the hydrochloride intravenously (one grain in 5 Cc. of normal saline solution) without any depressing effect on the pulse.

To summarize, the advantages of the emetine treatment are briefly: (1) simplicity and ease of administration of the drug; (2) no vomiting or depression; (3) accurate dosage (no loss through bowels); (4) rapid absorption and effect; (5) reliability of product (hydrochloride).

The question of curability of the emetine treatment can be answered only after a long

period has elapsed. Of the five patients that recovered, four have been heard from or seen and all have remained well. Patient 1 is still cured after three months and three weeks; patient 3 after two months; patient 4 after three months; patient 6 after two months and three weeks. Patient 5 has unfortunately been lost sight of. While these intervals of good health are not long, the outlook is, however, very encouraging.

While no definite conclusions can be drawn from the observations of so small a number of cases, Lyons believes that the results are highly suggestive that in the subcutaneous injection of soluble emetine salts an ideal method has been found of treating amebic disease. Time will soon show whether or not, as Rogers believes, another specific has been found.

DEATH AFTER NEOSALVARSAN.

DARIER (*Bull. de la Soc. Franç. de Derm. et Syph.*, November, 1912) records two cases which occurred in young men aged respectively thirty-one and twenty-eight. The first was suffering from tertiary tuberculo-verrucose manifestations on upper extremities, but otherwise was in robust health; the other was a weakly individual in the secondary stage, with pronounced pulmonary tuberculosis and albuminuria. Both cases had already received courses of mercurial injections. The neosalvarsan was given intravenously to both patients, according to Ehrlich's directions. The first case received on September 25 0.6 gramme, and on September 26 0.75 gramme, without toxic manifestations. On October 2 a third injection of 0.9 gramme was given, and on October 6, sixty-seven hours after the last injection, he died in convulsions, with a temperature of 103° F. The other patient, after receiving successively on September 28, October 2 and 5, 0.45, 0.75, and 0.9 gramme of the drug, died in a similar manner on October 14, nine days after the last injection.

In a lengthy survey and discussion of these two cases and six others of a similar kind the author comes to the following important conclusions: (1) Neosalvarsan would appear to be more dangerous than salvarsan. (2) Neosalvarsan can produce very serious nervous symptoms, notably encephalomyelitis and progressive neuritis of an arsenical type. (3) Exceptionally it may cause death with symptoms of acute arsenical poisoning. (4) These catastrophes are caused apparently by retention of the drug, due to inefficient or slow elimination, and at the present moment we have no criterion which can certainly enable us to prevent occasional accidents. It is obviously impossible to refuse administration to every case in which there would appear to be lesions of the kidney or liver. His advice is to begin treatment with small doses (a minimum of 0.2 or 0.3 gramme at first), and to increase the dosage by reasonable amounts, with minimal intervals of five or seven days, and to be sure that the preceding injection was not followed by any symptoms of intolerance; also to ascertain that the urinary excretion of arsenic is proceeding normally.—*British Medical Journal*, March 29, 1913.

IDIOSYNCRASY TO ARSENIC.

Two cases of idiosyncrasy to arsenic in the form of sodium cacodylate are recorded by C. STAEUBLI (*Deut. med. Woch.*, Dec. 26, 1912), who reviews the recent advances made in the study of the action of the various compounds of arsenic on the body. One patient, a man aged fifty-two, suffered from malaria, general debility, and neurasthenia, for which sodium cacodylate was prescribed. The first injection of 0.05 gramme, taken from a Bloch's ampulla, caused no disturbance. The same amount was introduced into the right forearm four days later. After twenty-four hours a rectal temperature of 101.8°, great weakness, pain in all the limbs, and in the loins, and a sensation of pressure in the head were observed. The site of the injection was hot and brawny, and erysipelas was suspected. Next day, however, the temperature was almost normal, the general condition was better, and the local swelling

was no larger. Scrupulous cleanliness was exercised when, four days later, the same dose was given, but twenty-four hours later the same phenomena recurred, and the injections were therefore discontinued.

The drug had been administered to many other patients without ill effects by the author, when he again observed symptoms of idiosyncrasy. The patient, a woman aged thirty-six, who suffered from exophthalmic goitre, had been given twenty-four injections of 0.05 gramme of Clin's sodium cacodylate on twenty-four consecutive days without ill effects. On August 14 the last injection was given. On August 24 she left the lowlands and came to St. Moritz, where, two days later, she was given an injection of 0.05 gramme of the drug. Next day her temperature was 102.2°, and she complained of "rheumatic" pains throughout her body, anorexia, and headache. Her respiration was labored and asthmatic. Although scrupulous cleanliness had been exercised, the site of the injection was hot and brawny. On the second day the patient was much better, and on the third day the temperature was normal and the swelling began slowly to disappear. As the needle had previously contained tuberculin, it was thought that a trace of this might have been injected with the sodium cacodylate, for the reaction was like that which follows an injection of tuberculin. This view was disproved by the repetition of the reaction on September 8, twenty-four hours after the patient had injected half the usual dose of sodium cacodylate into her left thigh. The local but not the general reaction occurred. On September 9 the author substituted Bloch's for Clin's preparation, and injected 0.05 gramme into the right thigh after careful disinfection of the skin. Next day the temperature rose to 102°, with a rigor in the evening. The other symptoms resembled those of the previous attacks, but were less marked. The site of the injection was again inflamed. The patient had completely recovered when, on September 16, she was given an injection of 0.025 gramme. Twenty-four hours later the site of the injection was firm and swollen, and the temperature was slightly raised. The same dose, injected on September 20, produced less fever, but a more violent local reaction than on the previous occasion.

The cutaneous reaction of the drug was now tested by von Pirquet's method. After the skin had been cleansed and lightly scarified in three places, glycerin was applied in two places and sodium cacodylate to one. After eighteen hours the former two control places showed no reaction, while on the third place a reddened and infiltrated papule, 8 mm. in diameter, had appeared. This increased in size during the next thirty hours, and was still palpable two days later. The only explanation the author can give for the patient's erratic behavior is that the passage from a low to a high level effected a change in the metabolism which rendered the tissues intolerant to the drug.—*British Medical Journal*, March 15, 1913.

THE GRAVE VOMITING OF PREGNANCY.

In an editorial article the *British Medical Journal* of April 19, 1913, points out that it is not every case of grave vomiting of pregnancy that calls for the induction of abortion, for it is not every case that is caused by the biochemical changes which are the result of pregnancy. Even if every instance of hyperemesis gravidarum were toxic in its nature, it would not necessarily call for the termination of the pregnancy. There are other ways of dealing with this dangerous complication of gestation than by bringing the gestation to an end, a method of treatment which Fieux characterizes, with reason, as "ultra-radical," and speaks of, without exaggeration, as the "cruel necessity of therapeutic abortion." Fieux himself has succeeded in curing four cases of "uncontrollable vomiting" of pregnancy by means of serotherapy. In two instances he injected serum from a woman in the early months of a normal pregnancy; in another instance he used a horse serum along with that from a normal pregnant

patient, and in the fourth case he employed only horse serum. The explanation of the good result in three of these cases may very easily be ascribed to antibodies developed in the maternal blood serum in response to chorionic antigens; but the equal success when horse serum alone was used is puzzling. Still, the outstanding lesson to be learned is that there is another way of treating even the toxic cases of hyperemesis; the "ultra-radical" plan of therapeutic abortion is not the only method which promises good success.

But, as has been said, all cases of incoercible vomiting in pregnancy are not toxemic in their origin. Dr. A. Herrgott of Nancy has recently reported a most instructive instance of the truly reflex variety of that alarming malady. The patient was a primipara who had never had a serious illness in her life, but admitted being of a very nervous temperament. Vomiting came on at the end of the second month of pregnancy, and rapidly became alarming in frequency and severity. The woman was sent in a very low condition into the Nancy Maternity Hospital to have the induction of abortion performed. Dr. Herrgott made a vaginal examination, and discovered that the pregnant uterus was displaced backward (retroversion); he replaced it without difficulty, and immediately there was marked improvement in the vomiting. To his disappointment, however, the amelioration of symptoms was only temporary; in fact, four days later the patient was as seriously ill as at first. Before proceeding to more severe measures he examined the patient once more, and found that the uterus was once more displaced, and that now it was retroflexed and almost incarcerated in the pelvis. By putting the woman in the genupectoral position he was able once more to replace the organ, but now he fixed it in its proper situation by means of a pessary. Nearly immediate improvement followed, and some three weeks later the patient was able to leave the hospital quite well, her pregnancy progressing normally.

Several lessons are to be learned from such a case as this. In the first place, in every case of vomiting in pregnancy, even if it be of the gravest type, the pelvis should be explored and the position of the uterus ascertained; if it be abnormal it should at once be corrected. In the second place, the obstetrician should satisfy himself that the replacement has been permanent, and should even fix the womb in its proper place by means of a pessary if there seem to be any risk of displacement recurring. But there is a third lesson which does not lie on the surface, and yet is of great importance. It is this: Even when there is a uterine displacement there may also be a toxic state; the retroversion or retroflexion may not be the cause—may not, at any rate, be the sole cause—of the vomiting. Consequently, if the replacement of the womb be not at once followed by marked improvement, other means—for example, the induction of abortion—should be instituted, and these without delay. Time enough must be allowed if this "therapy of despair," as Herrgott calls it, is to succeed. If we do not do this, he says, we run the risk of being too late.

There still remains a difficulty in some instances of distinguishing between a hyperemesis which is purely nervous and one which is toxemic in origin. Here Prof. Whitridge Williams comes to our aid. Believing that there are three types of excessive vomiting in pregnancy, that the neurotic is the most and the reflex the least frequent type, while the toxemic is the most serious, Dr. Williams thinks that it is very necessary to separate the neurotic from the toxemic as soon as possible. This can to a certain extent be done by ascertaining the ammonia coefficient of urine. "I believe," he says, "that for clinical purposes we can consider a given case of vomiting as toxemic in origin whenever a seriously ill patient, presenting a high ammonia coefficient (20 per cent or more), fails to improve after a few days' complete rest in bed, combined with suggestive treatment, energetic rectal feeding, and the administration of large quantities of salt solution per rectum and underneath the skin." Those who have followed Professor Wil-

liams's researches on this subject will take note that the high ammonia coefficient test is not now regarded by him as so certain a sign of the toxemic nature of the case as he at one time thought, yet it has a high value. Still, the great lesson to be learned regarding hyperemesis gravidarum at the present time is that whether it be reflex, neurotic, or toxemic in nature, the induction of abortion is not the only effective treatment available.

SODIUM CARBONATE IN RINGWORM.

Writing in the *British Medical Journal* of March 8, 1913, NOCK says that the following method was shown him by a conscientious but rather ignorant woman who has had charge for many years of a home for waifs and strays. She said that she had never known more than two applications necessary. Take a piece of sodium bicarbonate (the household washing soda) about the size of a walnut, and hold it against a red-hot iron (Nock uses the poker heated in the consulting-room fire); then rub the melted end freely into the ringworm, and particularly thoroughly if it is in the scalp, which must have had the hair around the lesion cut short. One application is sufficient on the body, but on the scalp it may be necessary to repeat it six or seven days later. Usually no dressing is necessary, though if sore boric acid ointment may be used. This apparently heroic treatment is practically painless, leaves no permanent mark, and, so far, has not failed the author.

IODINE STERILIZATION.

In the *United States Naval Medical Bulletin* for April, 1913, GARTON writes on iodine sterilization as now used at the United States Naval Hospital, Norfolk, Va. He thinks iodine is particularly valuable in two classes of cases—emergency wounds, especially of the soiled extremities of the laboring class, where the removal of grease and dirt is out of the question, and in sterilization of the skin prior to operations. In emergency cases the following procedure will give the most gratifying results: (1) Stop all hemorrhage; (2) mop off with dry gauze; (3) immerse in 7-percent (the official) tincture of iodine; (4) sew up if necessary; (5) bandage in dry gauze; (6) keep water of all forms away.

This routine method of skin disinfection and sterilization has been in use at the naval hospital, Norfolk, Va., for the past two and one-half years. Garton asserts he is thoroughly convinced, as are all the staff, that it is the ideal method adaptable to all kinds of cases with perfect sterilization of the skin.

Not only is it ideal, but, as above mentioned, its great usefulness in accidents is extremely valuable. It is simple, and saves time, labor, and cost of dressings prior to operations. It does away with the anteoperative procedures, which are not only annoying to the patients, but mentally disturb and in some cases frighten them. The skin inflammation from perhaps too vigorous scrubbing or bichloride irritation is avoided.

Garton has discussed this subject with many surgeons, and most of them were not using iodine, owing to the fact that skin blistering or a dermatitis followed. This can be avoided by washing off the excess with pure alcohol after the wound is closed.

He describes the method in use at the Norfolk naval hospital. A bath may be given a full thirty-six hours before operation. Shaving may be carried out if the patient is hairy. Sometimes they practice shaving and other times do not. In either case the results are the same. Shaving should be done dry, using alcohol (no water) twelve hours before operation. The usual precautions in regard to the bowels are followed. Nothing more is now necessary until the patient is placed on the operating table, his knees secured, field of operation bared, and the nitrous-oxide-oxygen anesthetic started. (Note carefully the patient is on the operating table, not roller stretcher, and the anesthetic started, and no further transfer required, hence no dan-

ger of infection by handling or misplaced sheets or dressings.)

A sterile medicine glass containing official tincture of iodine with a sterile cotton swab is passed to the assistant, who thoroughly applies one coat not only over the field of operation but to the surrounding area. Always use fresh tincture and a new swab with each operative case. The time is now taken, and full five minutes are allowed to pass, while assistants, nurses, etc., keep hands off and stand around. At the end of this time the sterile sheets, towels, etc., are applied, covering over the skin not required for the operation. The skin by this time is dry, has a nice bronze color, and the odor of iodine is perceptible. When the intestines are to be exposed a dry protective gauze pad is made to cover the skin.

After the wound is closed another light application is applied to the incision, a dry gauze pad is used to cover the wound, while all draperies are removed and the excess of iodine removed with gauze saturated in pure alcohol. This prevents the dermatitis and blistering so often complained of in the iodine method.

The usual dry gauze dressing is then applied, held securely in place with zinc oxide adhesive straps. Six to eight days later the dressings are removed, the wound is absolutely dry, and no signs of infection exist. A light dressing is again applied, principally over the stitch wounds; then the silkworm-gut sutures are removed and another light coat of iodine applied and a dry gauze dressing added. The results have been uniformly successful in all classes of cases, and, if carried out as described above, infection in clean cases will be almost unknown.

The two factors that are absolutely essential in iodine skin sterilization are: Wait fully five minutes after application and allow no water to touch the skin thirty-six hours before operation. If this latter has taken place or if the patient sweats, an application of pure alcohol is recommended. We are all prone to quote statistics from which we can prove our case, but out of 1180 of all kinds and classes of clean cases last year and an equal number this year he has yet to have an infected case.

In regard to the preparation of catgut, always buy the yellow or dirty looking catgut, and test it to see that it is not brittle. Wind on glass spool and secure both ends. Immerse in 5-per-cent alcoholic solution of iodine for five days. At the end of this time it is ready for use. Place spool on dry sterile towel and allow iodine to evaporate. If brittle, it can be immersed in sterile salt solution, or if iodine is to be removed place in alcohol. After drying it can be placed in sterile jars for future use. From the above it will be seen that its preparation is inexpensive, it is not easy to infect, and its tensile strength is not in any way impaired.

DIET IN HEART DISEASE.

The *Clifton Medical Bulletin* for April, 1913, contains an article by SCHOONMAKER on this subject. He says in considering patients with impaired compensation, two groups of cases are mentioned, namely, those (1) in which compensation is lost, and (2) those in which compensation is imperfect, yet sufficient to permit of limited physical activity on the part of the patient. The patient with lost compensation is essentially a bed case and inactive. His portal stagnation is usually sufficient practically to put the stomach out of commission as an organ of digestion. Very often his best plan is to take no food at all for from one to three days; hot drinks that require no digestion being sufficient—in small quantities, four to six ounces every three hours. As soon as the circulatory stagnation is somewhat relieved and the heart picks up a little tone, food that requires mastication and at the same time necessitates little or no active gastric digestion should be given; for instance, zwiebach, or any other crisp bread, with a little butter; and milk, either skimmed or diluted, which should be given separately from the bread—that is, not used to soften it. Mastication in the process of digestion is not appreciated at its full value by a good deal. Mastication does more than sub-

divide the food and mix it with saliva, important as this is; at the gateway of the digestive process, mastication sets in motion muscles, nerves, and fluids which are a part, and do by use become an active part, in that mysterious whole which we call digestion. Schoonmaker emphasizes this because a physician's tendency is to administer foods which are soft and more or less savory and require no mastication whatever. Superficially this seems like good treatment, but he is convinced that it is quite the opposite. As appetite improves, a fairly safe rule is to give the patient what he most desires, if by such action we do not violate certain basic principles. Rules that will do for all cannot be formulated, but it is quite certain that

First, a heart case should not at any time eat heavily. The necessary quantity of food in twenty-four hours should be taken in four or five meals instead of in three.

Second, liquids at meals should be limited to about six ounces, in order to avoid bulk in the stomach.

Third, a proper meal does not remain normally in the stomach longer than three hours; therefore such proteid foods as are allowed should be those that are the soonest digested; and the stomach, in cases of hypomotility from ptosis or other cases, should be encouraged by proper posture to pass its contents on into the duodenum.

Fourth, every regular meal, and luncheons between meals as well, should consist largely of food that demands mastication.

Fifth, the twenty-four-hour total of food should be well balanced as to proteids, carbohydrates, and fats.

Sixth, if the patient is conscious of fatigue, he should rest, fully relaxed, for from fifteen to thirty minutes before meals.

A further word about posture: The average individual stands and sits mostly in a manner that allows the abdominal and chest muscles to sag, thus lessening the actual space in both abdominal and chest cavities. Instruct your patient to stand and sit with his chest well up and his chin in, or as Goldthwait puts it, "stand and sit tall." This furnishes the largest possible space for the abdominal and thoracic organs to move in, thus tending to relieve cardiac embarrassment by upward pressure of the diaphragm and making it easier for the stomach to pass forward its contents. If there is pronounced gastroptosis, or gastric atony, or both—and it is surprising how often routine *x*-ray investigation reveals these—instruct the patient to lie flat on his back with his head low, and a pillow under his lower ribs, for one-half hour within an hour after eating. This will relieve the stomach of enough of its burden to prevent fermentation, while cardiac embarrassment from gas pressure is thus avoided. These rules and latter suggestions apply to both groups under consideration—to the cases of both complete and partial non-compensation.

Diet is most important in cases of cardiac embarrassment with imperfect compensation, yet with sufficient myocardial reserve to permit of limited activity. These are the chronic cases. These are the men and women who are attending to routine duties in their several spheres, with from one-half to two-thirds of endurance power. Many must live the balance of life thus. They can never hope to store up heart energy equal to that of the normal individual. Their endurance is always limited; so they are frequently, perhaps daily, near the border-line where cardiac overstrain begins. For them we must supply sufficient food, which when converted into energy will be equal to that needed by a well person of the same type doing the same amount of work. If the patient's digestion were normal this would be an easy task, but his digestion is not normal, and therefore we must follow our rules.

In estimating the energy that a given day's ration should furnish a convenient method is to determine its caloric value; but in so doing we should remember that caloric value and nutritive value are not synonymous. A food may be rich in calories yet require so much energy for its digestion and assimilation that the residue

has a very small nutritive value—that is, the energy in calories required to digest a given food may approximate the energy supplied by the food. If, however, we provide a well-balanced, easily digestible daily ration, prepared and served so that digestion need not wait upon good appetite, we can at the same time with convenience and profit measure the quantity by its caloric value.

The following is a specimen diet marked out on this basis and used at the Clifton Springs Sanatorium:

	Breakfast.		
14.	Oatmeal	88 grms.	360. cal.
.8	Grapefruit	175 grms.	70. cal.
3.	Toast	34 grms.	90.8 cal.
1.8	Cream	72 grms.	129.6 cal.
	Sugar	15 grms.	61.5 cal.
.1	Butter	11 grms.	84. cal.
	Lunch, 11 o'clock.		
28.6	vii oz. milk	212 grms.	150. cal.
	Dinner.		
13.	Roast beef	68 grms.	159.3 cal.
19.	Boiled rice	58 grms.	208. cal.
.7	Tomatoes	64 grms.	14. cal.
.4	Celery	52 grms.	7.9 cal.
1.	Orange	168 grms.	64. cal.
	Lunch, 4 o'clock.		
16.9	vii oz. cocoa		121.1 cal.
	Supper.		
5.5	One egg	42 grms.	60.8 cal.
4.6	Bread	47 grms.	119.4 cal.
	Butter	11 grms.	84. cal.
	Salad	40 grms. lettuce	6. cal.
		8 grms. oil	744. cal.
2.1	Cake	34 grms.	121. cal.
	Pineapple	71 grms.	30.4 cal.
111.5	Total for 24 hours		2683.8 cal.

ELIMINATION OF SALVARSAN.

CAFFARENA (*La Pediatria,* No. 4, 1912) found that salvarsan was eliminated through the milk whether it was given endovenously or intramuscularly; if given through the veins elimination takes place for two or three days; if given intramuscularly it takes from ten to twelve days; hence if an effect is desired on the suckling infant it is better to give the drug by the intramuscular method, and all the more as after endovenous administration to the mother bad effects have been noticed in the child. Probably this is due to the setting free of a large amount of endotoxin as a result of the very rapid destruction of spirochætæ which follows direct venous ingestion of salvarsan. Indirect antisyphilitic treatment of the child through the mother would not suffice for a severe case of congenital syphilis; in such a case some direct treatment, whether by injection or otherwise, of the child is necessary.—*British Medical Journal,* April 19, 1913.

THE CONDUCT OF LABOR WITHOUT VAGINAL EXAMINATIONS.

GREEN writing in the *Boston Medical and Surgical Journal* of April 10, 1913, reaches the conclusion that the common custom of making frequent vaginal examinations during labor is a bad one and deserves to be classed as "meddlesome." These examinations disturb and often hurt the patient, they add to the risks of infection, they give no information that cannot generally be obtained by external examination, except as to the condition of the cervix, and the possibility of prolapse of the cord or a fetal extremity. Except in hospitals, to which naturally many abnormal cases are sent, the great majority of cases are normal as far as the fetal passenger and the maternal passage are concerned, and when delay occurs it is much more generally due to defective pains. Frequent vaginal examinations do not remedy this difficulty, and the obstetrician's efforts can be more profitably employed than in making them.

Green has already intimated that much can be done during pregnancy in standardizing the woman's nervous equilibrium and muscular tone. Cannot something also be done during labor? Especially in the long first stage of most primiparæ it is worth while to give attention to two important facts: first, it is best that the parturient should be out of bed until the first stage is well advanced; secondly, it is best that she should be occupied and her mind diverted with light duties or amusements. Many a parturient woman will bear her first-stage pains with comparative equanimity and without loss of her morale, if she gives her attention to household duties, writes

notes, or plays games of cards. Moreover, in her usually long first stage a primipara should be fed with easily assimilated liquid food; no one is brave when hungry; no general, if he can help it, sends unfed troops into battle. As the first stage approaches its end the fact is very often shown by blood-streaked mucous discharges, by nausea and vomiting, and by rupture of the membranes. Soon after it will often be observed that the parturient instinctively begins to bear down, to strain, and the profuse secretions, gaping vulva, and relaxation of the anus are good indications of progress. Sometimes the second stage drags because the laboring woman fails to strain and does not make proper use of the supplementary force of her abdominal muscles. This is the time for the obstetrician to take active charge, to teach the young primipara to make full use of her muscular powers, to encourage, to coach, even to command. Even well-trained nurses generally fail to make their patients work properly, because, Green supposes, women more naturally obey a man than another woman. A properly coached second stage rarely exceeds normal limits in a well-prepared parturient in the absence of pelvic and fetal disproportion or fetal malpresentation.

HIGH ARTERIAL PRESSURE.

Concluding an article on this subject in the *American Journal of the Medical Sciences* for April, 1913, RIESMAN says the treatment of hypertension is a subject of great practical importance upon which there is as little unanimity as upon most other subjects of medical practice. He has already discussed means of prevention, an object possible of accomplishment when the taking of blood-pressure becomes a habit and when the laity learn to realize the importance of paying for medical advice before it is imperative to have it.

It should be borne in mind that the high pressure, like much of nature's work in the body, is compensatory and reparative. Hence any attempt to depress the blood-pressure to its normal for the individual is both irrational and harmful. All that we may safely attempt to do is to lower the blood-pressure when it is excessively high to a point where symptoms cease and to keep it there. Serious consequences have followed when a pressure of 240, for example, was knocked down medicinally and precipitately to 150. Let us see what we can do to lower hypertension to a reasonable level. If we knew the direct cause we might combat it. As we do not know it we must work indirectly. First and foremost in Riesman's mind, he asserts, is rest, mental rest being more important than physical rest, although the latter has its place. It is astonishing what relief from the "weariness, the fever and the fret" will accomplish. Sometimes driving a patient to make a decision in a critical matter, so as to have it over with, accomplishes more than any medicine.

The diet is of importance, but more from the point of view of quantity than of quality. Many patients with hypertension have a habit of overeating, and suffer from what Sir Clifford Allbutt calls "hyperpiesis." And it may be wise to restrict somewhat the nitrogenous, more particularly the purin-containing foods. A valuable admonition is that the patient should eat a small evening meal—he will rest much better. In regard to stimulants, Riesman asserts he is more afraid of tabacco than of alcohol, but usually restricts both, as the case may require. He does not think tea or coffee is good for these patients, a fact they often discover for themselves. The bowels must be kept open. No one remedy or measure can be employed for all cases. The salines are useful. Many persons get comfort from a pill of phenolphthalein and rhubarb, or from the well-known compound liquorice powder. An occasional dose of calomel or blue mass serves a useful purpose. Special baths are of doubtful value, and he questions particularly whether the Turkish bath so frequently employed does any good. A simple hot bath or a short electric cabinet bath may at times be of benefit, but the

latter ought not to be left to the uncontrolled discretion of the patient.

Electricity in the form of high-frequency current (autocondensation) has a growing number of advocates. Riesman's use of this is of such recent date that he has no personal opinion.

As for drugs, even the laity are familiar with the value of the nitrites, and are no longer frightened when nitroglycerin fails. In these cases sodium nitrite in doses of from ⅛ to 2 or even 3 grains may prove useful. Erythrol tetranitrate is a powerful vasodilator in doses of one-half grain, but often produces a painful fulness in the head, to which patients object seriously. The nitrite group of remedies is to be used only to relieve symptoms, which they often do—especially nocturnal dyspnea—in a remarkable manner. The continued use of the nitrites is of doubtful utility unless the pressure is rising, or there is angina pectoris, or marked dyspnea. In such cases they may be given over a long period in large doses.

The iodides are much in use. Riesman gives them routinely, though their method of action is unknown. Perhaps they reduce the viscosity of the blood. He prefers the sodium salt given two hours after meals, in water or milk. He finds the newer iodine-containing tablets convenient, especially for persons who travel.

Digitalis might appear to be contraindicated in the cases of hypertension with which he is dealing, but strange as it may seem, many patients who are suffering from dyspnea and even from vertigo do well on small doses of digitalis. He prefers either the tincture in from 5- to 10-minim doses three times a day, or the powdered leaves (¼ to 1 grain).

There is one more measure in the value of which he has an abiding faith—namely, venesection. At the Philadelphia General Hospital venesection never went entirely out of use, and in the last score of years it has again become popular and is winning its way into general practice. It is safe to abstract in such cases up to a pint of blood, and if the pressure instrument is kept on the arm and the pressure controlled, we may take off 20 to 24 ounces. The relief from symptoms is often magical.

A number of European health resorts enjoy a great popularity in the treatment of hypertension and other cardiovascular conditions. Personally, Riesman doubts whether there is anything specific in their waters or in their baths; but freedom from care, regular hours, and greater frugality of living are probably the factors that achieve the good results.

DO RESULTS JUSTIFY THE USE OF PHYLACOGENS?—A REPORT OF FORTY CASES.

The *Boston Medical and Surgical Journal* of June 26, 1913, contains an article by METCALF, of Concord, N. H., on this live topic. His conclusions are as follows:

In certain diseases we may obtain through these preparations more relief than has hitherto been obtainable by other means. These benefits more than make up for the unpleasant reactions that follow administration, although these reactions may be severe.

With adequate doses we can relieve or cure a large percentage of cases of infectious arthritis, both in its acute and its chronic phases. While it is true that a vaccine made from the causative organism might work equally well, it is also true that our present knowledge rarely permits the isolation of this organism; indeed, the original focus of infection is often doubtful.

Gonorrheal phylacogen is not so effective as rheumatism phylacogen — perhaps no better than its humble but honest brother, the vaccine.

Mixed infection phylacogen may be employed in any case of bronchial asthma that is not readily relieved by other and simpler methods.

In bronchitis and pleurisy the value of this basic phylacogen is possible, but not certain.

In pneumonia the use of pneumonia phylacogen will probably lower the death-rate. It may be given with relative safety

even to patients moderately deep in the toxemia of the disease, but it should be given in small doses, averaging, at the start, 1 or 2 Cc. subcutaneously.

In cases in which the patient has had several successive attacks of a given infection, the outlook, with this treatment, is quite as good as in cases in which the attack is the initial one.

Further involvement after beginning treatment is rare. It occurred in only two cases out of forty—one a gonorrheal arthritis, one an infectious arthritis.

For two or three days the local reaction at the site of injection may be very annoying and painful. Frequent applications of whitewash relieve to a certain extent.

Each injection must be made in a new spot, preferably in the abdominal wall or beneath the scapula. Ordinarily injections are made subcutaneously; intravenous injections, while sometimes more effective, require greater skill. The site of injection may be frozen with ethyl chloride or anesthetized by cocaine, but this is not necessary if a fine needle is used.

Injections may usually be given in a physician's office, if the patient is instructed to go home directly and to keep quiet. In only a small percentage of cases is rest in bed necessary.

Uniform results can be obtained only after considerable experience. In a limited proportion of cases the proper administration of phylacogens requires that one have special knowledge derived from fairly extensive work in this field. It is a question whether the promiscuous use of phylacogens may not have undesirable results.

The age of a patient may apparently be disregarded; but a bad heart demands that one use extreme caution. Nephritis, in all probability, does not contraindicate this treatment.

In about three-fourths of the cases there will be a more or less marked constitutional reaction. It is not uncommon for an individual to react smartly to the first dose or two, but only slightly or not at all thereafter. A marked reaction may be very severe; at such a time a patient of Metcalf's looked not unlike one who has renal colic. He described his symptoms thus: "Injection at 3.30 P.M. Soreness in region of injection appeared at 6 P.M. At 6.40 dizziness commenced. About ten minutes later felt chills through the body, which caused shivering and increased pulse. Was very hot and faint. This continued until 8.10. Had to be helped upstairs to bed on account of intense local soreness. Could not undress alone. Slight nausea and headache continued through most of the night. Arose at 9 A.M. with headache gone and temperature apparently normal. General improvement in joints, arms, and back plainly noticeable."

A physician who wishes his patient to have a peaceful night should administer phylacogens in the forenoon.

Small doses at the beginning of treatment are not always effective; but once a disease is under control, it may be advisable to continue treatment for a time with an occasional small dose. The amount and frequency of the injection must depend on the amount of reaction, the change in symptoms, and the degree of prostration. A dose which causes no reaction may not be effective.

HYPOTENSION AND HYPERTENSION, AND THERAPEUTICS.

McGRAW writing in the *Journal of the Michigan State Medical Society* for May, 1913, has this to say as to the treatment of hypotension:

The treatment of hypotension is, of course, directed toward the cure or improvement of the disease of which it is a symptom. The subnormal pressure in wasting diseases rarely, in the opinion of McGraw, demands direct treatment; a rise of pressure will accompany improvement in the causative disease, whether it be accomplished by hygienic, medicinal, or operative measures.

In tuberculosis, fresh air, abundant nourishment, moderate exercise, and sufficient rest will elevate the low pressure in

just that proportion that they improve the disease. Hoobler, who studied the effect of cold fresh air in tuberculosis of children and young adults, found that with the transfer of the patients to open air there was a gradual rise of pressure within one to two hours; that if the patient was kept in the open air, the pressure remained higher, but was reduced again on going indoors. He also found that the more advanced the case, the lower the pressure indoors and the greater the rise in the open air. Practically the same results were attained with the open-air treatment of pneumonia.

In pneumonia the fall in pressure may be due to either vasomotor or vascular causes or to the weakening of the heart muscle in addition. For the purposes of treatment it is important to know which condition predominates, and here the pulse-pressure may give us some indication; a high pulse-pressure—*i.e.*, a great difference between the systolic and the diastolic pressure—points to vascular insufficiency; a low pulse-pressure suggests the failing heart. In the first instance, vasoconstrictors are indicated; if given in the last, the increased resistance may fatally overburden the already weak heart.

As a vasoconstrictor adrenalin has perhaps the first place, its effect being chiefly due to direct action on the muscular coats of the peripheral arterioles.

Pituitary extract has much the same action, but the effects are prolonged. Ergot is also used for the same purpose. Subnormal pressure from failing cardiac force calls for digitalis, strychnine, or caffeine.

To sum up on hypertension:

1. It is a symptom, not a disease; so treatment should be directed toward the disease in which it appears.

2. It is usually compensatory, and it is better to reduce it indirectly than by direct dilatation of the arteries.

3. When it is necessary to lower tension directly, as in angina or in threatened apoplexy, the blood-pressure should be carefully controlled by frequently taking records of the pressure, which should not be lowered beyond what may be considered normal limits for that particular disease.

Here it is obvious that endeavoring to lower pulse tension by prescribing vasodilators would, should it succeed, put just that much more strain on a laboring heart. The treatment is, of course, reduction of the intracranial tension by operation; treating the disease, not the symptom. The only medical treatment possible, and one only to be used in an inoperable case, would be the "administration of large doses of atropine, hoping thereby to paralyze the vagi, increase the heart's frequency, and thus allow a more easy rise of pressure." Lumbar puncture might be worth trying, with the hope thereby to reduce the intracranial pressure.

In considering the treatment of high blood-pressure in incipient or in well-developed arteriosclerosis, we have a more complicated subject. It is said that prolonged hypertension breeds arterial disease; that the kind of hypertension is induced by overwork, mental or physical, but especially by overeating and drinking, habits peculiarly characteristic of the American people. It has been noted by men doing blood-pressure work that higher pressures are as a rule found on Monday morning, a result of Sunday's dietary indiscretions! This kind of hypertension may also be compensatory in character—*i.e.*, increase of pressure to meet the demand for increased elimination. In these incipient cases the treatment must here again be directed toward the cause.

A general reduction in diet, especially in proteids, for the products of proteid metabolism seem especially apt to act as pressor toxins. Elimination of alcohol, of course, but also a reduction in all fluids ingested; this for two reasons, to stop overfilling the blood-vessels and to aid in the reduction of food intake. A salt-free or partially salt-free diet will also help in this particular. A sufficient amount of gentle, graded exercise, preferably walking, bathing to stimulate the skin elimination, good intestinal evacuations, and a let-up from mental strain will go far in preventing these incipient cases

from developing into full-fledged arteriosclerosis.

Hypertension in developed arterial disease is a combination of spastic arterial constriction and of anatomical arterial change. For the first factor, the treatment outlined for incipient cases may well be applied; for the latter, potassium or sodium iodide have long been prescribed. Whether the iodides exert any influence on the sclerosis, except possibly in specific cases, is very doubtful. They are, perhaps, a harmless means of keeping the pressure within safe limits, and good results are frequently reported.

In acute attacks of high tension—the so-called vascular crises in which there is sudden vertigo, dyspnea, and headache with slight precordial pain, or perhaps severe angina develops—the vasodilator drugs are of the greatest use in tiding the patient over. Amyl nitrite, nitroglycerin, and erythrol tetranitrate are most frequently used. They should, however, be supplemented with rest in bed and a mercurial and saline purge, and perhaps in severe cases by venesection or a hot pack.

It is much better, McGraw believes, in maintaining blood-pressure at safe and comfortable limits, to rely mainly on dietary and physical measures and to keep our drugs for the emergencies. In certain cases in which very high pressures do not yield to diet and hygiene, small and repeated doses of nitroglycerin or of the nitrites may be indicated; but the patient should be under constant observation and the blood-pressure and the urinary output carefully watched.

What has already been said about the treatment of high tension in arterial disease is equally applicable to chronic nephritis. Hypertension is undoubtedly a normal condition in nephritis. If it is not giving symptoms and does not rise beyond what may be considered safe limits for that particular disease and patient, it should not be interfered with. Headache, vertigo, insomnia, those harbingers of uremia, may best be treated with rest in bed, attention to diet and bowels, hot packs, and perhaps small doses of nitroglycerin, which is sometimes followed by gratifying diuresis. In other words, treat the toxemia, the cause, not the hypertension, the symptom.

A word should be said about the treatment of hypertension by the high-frequency current. It has been proved beyond doubt that this form of electricity will reduce most forms of hypertension promptly from 10 to 70 mm., and if applied frequently the pressure may be permanently kept low. There is considerable controversy concerning this method between the internists and the electrotherapeutists; the argument resolves itself into the question of when hypertension is compensatory and when it is not, for both sides now admit that high frequency should not be used to reduce purely compensatory high tension. Snow, of New York, one of the leading electrotherapeutists, thinks that only "in parenchymatous nephritis, in cirrhosis of the liver, or whenever incidental resistance other than hypertension is present in the path of the circulation," is hypertension compensatory. Internists, on the other hand, hold more to the views expressed elsewhere in this paper—that nearly all hypertension is more or less compensatory, so that the genuine indications for lowering tension by high frequency are few and far between.

It seems to the author that what has been said about the use of vasodilator drugs holds true concerning high frequency; that if used it should be regarded only as an adjunct to dietary and hygienic measures, and then with great caution and with careful blood-pressure control.

THE PATHOGENESIS OF MERCURIAL STOMATITIS AND COLITIS.

ALMKVIST (*Dermatologische Zeitschrift*, November, 1912, December, 1912), in a long series of clinical and experimental observations, provides additional proofs of his original explanation of this important toxic action of mercury, and replies to the criticisms of other writers in a very convincing manner. According to him putrefactive processes in the mouth, dependent mainly on pyorrhea, cause erosion and a loose, congested condition of the mucous

membrane, in the meshes of which H_2S is generated and freely obsorbed. The capillaries which supply the mouth are charged with mercury, which, meeting in this situation with the H_2S, will be converted into the sulphide; this is deposited in the tissues and capillary walls as a black precipitate, which can be demonstrated microscopically and chemically. Mercury sulphide is very toxic, as he has experimentally shown, and the damage done to the vascular system locally can therefore readily be accounted for. Further erosion leading to ulceration is the result, and if there is much circulatory disturbance the organisms which abound in this cavity of the body become so virulent and the body resistance so weak that even gangrene may ensue.

To Sabattani's suggestion that the local selective action of mercury on the mouth is due to the ionic concentration of Hg in the saliva owing to the low protein and high chloride content of the latter, the author returns what would seem to be an unanswerable reply—namely, that mercury and iodoform locally applied have not only prevented but have actually cured mercurial stomatitis, and that such has been for quite a long time the chief therapeutic measure used in the St. Göran Hospital in such cases. The colitis is explained in much the same way, and it is noteworthy that in animals such as dogs, in which the intestinal putrefactive processes are not marked, colic and diarrhea with watery and blood-stained stools are exceedingly difficult to produce.—*British Medical Journal,* April 19, 1913.

THE INDIVIDUAL TREATMENT OF DIABETES.

In the London *Lancet* of March 29, 1913, ARANY writes on this topic. Concerning the dietary question he discusses some of the most important articles of food recommended to diabetic patients.

Liquids. Bouillon possesses no nutritive value at all, but it satisfies the diabetic's so-called "stomach-hunger" and is a very good carrier of eggs. The nutritive value of tea and coffee does not exceed very much that of bouillon, but if taken with fat cream either is a welcome addition to the diabetic's diet. The nutritive value of alcohol is denied by most authors, but even if the case be such Arany avails himself of it in patients who are in the habit of taking a moderate amount of wine, the more so as the diabetic's diet is, owing to its richness in fat, hard to digest, and that the moderate use of wine is helpful to the digestion cannot be denied even by the greatest foe of alcohol.

Meat, and especially its fatter kinds, such as beef, pork, and goose, are the diabetic's principal source of proteids; veal, venison, and fish make the diet more varied, but their nutritive value does not rank so high as that of the former.

Fats play a most important part in the nutrition of the diabetic, as they are most readily assimilated and contain a large amount of calories in a concentrated state. They are very well tolerated in the shape of bacon and butter, and as an addition to other foodstuffs.

Eggs, owing to their richness in proteids, rank as highly as meat, their greatest advantage being that they are gladly taken by the patient, and can be prepared in various ways. They are also excellent carriers of fat.

Vegetables should be the diabetic's principal article of food: (1) on account of their proteids being better tolerated by the patient than those of animal food; (2) because they are very good carriers of fat; and (3) owing to their filling the patient's stomach up, whereby the diabetic's stomach-hunger gets more satisfaction than if an amount of meat, corresponding with the calories of the vegetables, were ingested by him.

Fruit. Only the sour kinds of fruit can come into consideration, and even these must not be recommended to patients of the third category.

Milk and its products. Sweet milk contains from 4 to 5 per cent of milk-sugar, and is fairly well tolerated by patients belonging to the first and second category if given in moderation. Cream contains less

sugar and more fat than milk, and is therefore preferable in patients of the third category, if not used too generously. Sour milk contains, of course, less sugar than fresh milk and may be used more freely, and is a very useful addition to the grave diabetic's diet. Butter should be consumed in large quantities, and the same refers to cheese, especially to its fatter kinds.

The question of bread is of the greatest importance. The patient usually desires more of it than the doctor can possibly grant him. This situation can be helped if the ordinary bread is replaced by a larger amount of aleuronat bread, containing only half the amount of flour of ordinary bread, the other half being replaced by aleuron, a vegetable proteid. It must be emphasized that some preparations sold under this heading are unreliable.

Although the number of drugs recommended year by year is legion, our therapeutical knowledge stands much where it stood a hundred years ago, and we are compelled to avail ourselves principally of opium in cases in which the dietary measures do not prove sufficient. Especially cases belonging to the third category require this drug from time to time, and it will be found that only larger doses produce a somewhat mitigating effect upon the polyuria and sometimes also upon the glycosuria, but no effect whatever upon the acidosis. As a preventive of the last-named, the alkali treatment comes into consideration, and it is advisable to use a combination of different alkaline salts in large doses. This accounts for the efficaciousness of the alkaline mineral waters, containing different kinds of alkali in readily assimilable doses. The efficacy of these waters is increased by their hot temperature, which accelerates their reaching and neutralizing the blood. It is also a well-known fact that patients who cannot get rid of their glucose by dietary measures, sooner lose their sugar if the dietary treatment is from time to time combined with a course of alkaline waters. Besides, it must not be forgotten that the diabetic's diet is rather hard to digest, and very frequently digestive disorders of various kinds ensue, which may be effectively treated by alkaline waters. It is, therefore, advisable to prescribe in such cases once or twice a year a three or four weeks' course of mineral water treatment, for which purpose from two to three tumblerfuls of the warmed Karlsbad Mühlbrunn at intervals of fifteen minutes will be found the most efficacious. It cannot be denied that these waters are less efficacious in a bottled condition than if taken on the spot, but it is equally true that they do not lose the whole of their value by the transport, and it is a good deal better to take them at home than not to take them at all.

With regard to health resort treatment, it goes without saying that the spas having alkaline springs are to be considered in the first place, but before sending a patient anywhere we must make sure that the dietary conditions of the spa we select are suitable for a diabetic patient. In this respect the Austrian spas are quite reliable. Not quite so good are these conditions in Germany; and in the French health resort the patient is almost left at large. Mountain climbing and mountain air are very useful adjuvants of the spa treatment, and are not infrequently instrumental in improving the patient's assimilation.

GASTRIC ULCER: ITS NON-SURGICAL TREATMENT.

CORNWALL in the *New York Medical Journal* of April 19, 1913, reaches these conclusions:

Practically every case of gastric ulcer is entitled to at least one chance to recover without an operation, and most of them are entitled to more than one chance.

The non-surgical treatment of gastric ulcer consists essentially in keeping the ulcer as quiet as possible, which is best effected by rest in bed for at least four weeks, and a diet which will least irritate the ulcer and least excite gastric peristalsis.

Rectal feeding in the beginning is positively called for in all severe cases, and is desirable in the others. It may be kept up for a considerable period, especially if morphine is given in fairly large doses.

The ulcer is least irritated by articles of food which are free from spices, condiments, acids, sugar, and indigestible residue, and which do not powerfully excite the secretion of the acid gastric juice. In other words, the ulcer is least irritated by a diet of modified milk and milk products, cereals, and bland fruits.

Gastric peristalsis is least active if the food, in addition to being chemically unirritating, is fluid or semifluid, also if it is introduced in small quantities at a time.

Speedy emptying of the stomach is facilitated by the patient lying on his right side as much as possible during the time that food is in his stomach.

The return by the apparently recovered patient to ordinary diet should be very gradual; especially moderate for a long time should be his indulgence in food that is slow of digestion, of sweets, and of animal food which stimulates strongly the secretion of acid gastric juice.

Olive oil is soothing to the ulcerated stomach, is good food, and is laxative.

Drugs, as such, are of very little use in the non-surgical treatment of gastric ulcer.

THE ACTION OF SALICYLIC ACID AND CHEMICALLY ALLIED BODIES IN RHEUMATIC FEVER.

This important subject of which we know too little is discussed by RALPH STOCKMAN in the *British Medical Journal* of March 22, 1913. He asserts that salicylic acid in 15- and 20-grain doses every four hours has no superiority over sodium salicylate in effectively treating cases of acute rheumatism. It was given as a mixture suspended with mucilage, and did not cause any particular gastric irritation. Salicylic acid was the preparation originally used clinically, but was soon replaced by sodium salicylate, as the latter is more soluble, and also less irritating to the stomach.

Sodium salicylate in sufficient doses (90 to 160 grains or more in twenty-four hours) acts very satisfactorily when the infection is recent, when the inflammation is confined to the joints, and when treatment is begun early. It is quite otherwise when the fibrous tissues of the heart valves or of the muscles or body generally are deeply implicated. Then it does not act so rapidly or effectively. Such cases linger on for weeks or months in spite of treatment, and relapses are very apt to occur. For this reason, and especially to avoid the occurrence of permanent damage to the heart, it is a matter of first-rate importance to discover a more active antirheumatic than the salicylates. In an uncomplicated case of acute rheumatism about one ounce of sodium salicylate spread over two to four days is usually sufficient to abolish symptoms, but this does not kill off the infective organisms, and hence relapses are apt to occur unless its administration is kept up in suitable doses for about three weeks or longer, when in most cases the infection has been overcome.

Mendl has advocated the intravenous administration of sodium salicylate, and as given thus it very rapidly lessens pain, but it is not an effective method owing to the dose (5 grains) being too small, and to the practical impossibility of giving it often enough to keep the blood sufficiently saturated.

Very large doses have also been advocated, with the idea of sterilizing the body —up to 400 and even 500 and 600 grains in twenty-four hours; but apart from the risk of causing acidosis, it is doubtful if the body can be sterilized in this way, and it is not agreed that they are practically more efficient than smaller ones.

Sodium salicylate is a feeble germicide and antifermentative. It has almost no action on yeast or bacteria.

Saligenin (o-hydroxybenzylalcohol) is chemically the alcohol of which salicylic acid is the corresponding acid, and in the body it is readily converted into the latter, 100 parts yielding 111 parts salicylic acid. It is a white powder without much taste, is readily soluble in warm water and in alkalies, and does not irritate the stomach if pure. Stockman treated four cases with it, giving 10 grains every two hours. Its action was very rapid and satisfactory. In

one case the pain ceased in twelve hours and the temperature was normal in thirty-six hours; in another the pain and swelling of the joints had gone in thirty-six hours; in a third after twenty-two hours; in the fourth the fibrous tissue was widely affected, and 1340 grains were required. It causes a good deal of perspiration, and two of the cases suffered from deafness. Outside the body it has no antifermentative or antiseptic action. In rabbits, when given per os, its action was rather irregular, but 45 grains was usually a fatal dose.

Salicin is the glucoside of saligenin, and is hydrolyzed in the body into its two components, the saligenin being oxidized to salicylic acid. Scheffer states that this takes place in the blood. It yields only 43 per cent of its weight of salicylic acid, and therefore needs to be given in a dose twice as large as sodium salicylate (of which 13.3 per cent is Na). It is quite soluble in warm water, has a bitter taste, and if well diluted does not irritate the stomach. It is excreted in human urine as salicylic and salicyluric acids, never as unchanged salicin. Given in 20-grain doses hourly, or 30 grains every two or three hours, its action in rheumatic fever is highly satisfactory. Stockman asserts he has often given 60 grains, and repeated it in two hours without any ill effects. Its action in acute rheumatism depends on the development of salicylic acid in the blood, but both it and saligenin differ somewhat from salicylic acid or sodium salicylate in their general action. A solution of 1 in 250 does not prevent yeast fermentation, and it seems to have in itself little or no effect on low organisms.

Acetyl-salicylic acid is scarcely soluble in water, and the solution gives no purple color on adding ferric chloride (no free salicylic acid). In the presence of alkalies the acetyl group splits off and leaves salicylic acid, a change which takes place in the duodenum, where at the same time sodium and other salicylates are formed. It is doubtful, however, whether the whole of it undergoes these changes, as it is a much more powerful analgesic than sodium salicylate, and this can only be accounted for by assuming that a part of it is absorbed unchanged and exercises this effect. A comparatively slight analgesic action such as acetyl-salicylic acid exerts cannot be satisfactorily studied in animals, but patients agree that even in non-rheumatic affections it lessens pain. This is true only to a very slight extent of salicin or salicylic acid.

In acute rheumatism doses of 15 grains every three or four hours act very satisfactorily. There is no reason to suppose that the action is other than that of sodium salicylate. Stockman has found that it irritates the stomach in many people more than sodium salicylate does, and that it is equally liable to cause perspiration, deafness, and ringing in the ears. Serious drawbacks to its clinical use are that it is incompatible with sodium bicarbonate, that it cannot be pushed to large doses without causing sickness, and that it is insoluble in water and cannot be given as a mixture.

A solution of 1-in-250 doses does not stop yeast fermentation, so that any antifermentative or antibacterial action must only occur when its salicylic acid is split off and can act by itself.

Salol (phenyl-salicylate) is split up in the small intestine into salicylic acid and phenol. The dose is limited by the poisonous action of phenol, and it is therefore quite impossible to give as much of it as will yield enough salicylic acid to treat efficiently a case of rheumatic fever.

Roughly, one-third of quinine salicylate is salicylic acid and two-thirds quinine, and the dose is usually stated as 1 to 5 grains. The quinine part is inert in rheumatic fever, and the salicylic portion is quite insufficient in amount. Cases treated with 10 to 15 grains six-hourly showed practically no improvement. Deafness and ringing in the ears are brought on very readily by it.

Methyl salicylate can be given internally, in 10- to 15-minim doses every three or four hours, in milk, or on sugar, or in emulsion, and it can be externally applied at the same time to the inflamed joints. Cases treated in this way improve very rapidly, and there can be no doubt about the efficiency of the method. It is, however, very

apt to cause nausea and sickness. Baas says that 8 to 13 per cent of it is excreted in the urine unchanged, and the remainder as ethereal salicyl-sulphate.

Glycosal is a glycerin-ester of salicylic acid. Given in 90 to 120 grains per day its action was feeble and unsatisfactory, owing to the insufficient content of salicylic acid.

Salicyluric acid is the form in which salicylic acid is chiefly excreted in the urine, accompanied by a certain varying amount of salicylic acid always in very much smaller quantity. It is formed in the body by a combination with glycocoll. It has lost almost entirely the poisonous and antifermentative and antibacterial actions of salicylic acid, and it is quite inert in acute rheumatism. The fact that salicylic acid is so rapidly and so largely converted into this inert substance in the body explains why it is necessary to give it in frequently repeated and large doses to maintain its effect.

Dimethyl-salicylic acid, methylsalicylate of methyl, is an oily volatile substance with a slight odor, and an irritating aromatic taste. It gives no purple color with ferric chloride. Four grammes given per os to a rabbit had no action, but 8 grammes was fatal after some hours. The urine gave no purple color with ferric chloride. Doses of 20 minims four-hourly proved absolutely without action in rheumatic fever. It is not converted into salicylic acid in the body, and this accounts for its non-effect. A solution of 1 in 1000 did not prevent yeast fermentation.

Sodium methylsalicylate and salicylous acid (salicylic aldehyde), the three toluic acids, and disodium salicylic acid are all too irritating to give internally.

The application of certain salicylic compounds to acutely inflamed joints and muscles greatly eases rheumatic pain, but the number of those which can be absorbed through the skin is very limited.

Methyl salicylate is the most used and is the most efficient. It is seldom irritating to the skin, and can be rubbed in or applied as a dressing either undiluted or as three parts to one of olive oil. Ethyl salicylate and methyl meta-cresotinate have the same effect, but their odor is equally pungent.

Mesotan, a methoxymethyl ester of salicylic acid, is efficient in lessening pain, but has the important drawback of being apt to cause troublesome eruptions.

Spirosal and ulmarene are oily salicylic ethers without much odor, but also without much action.

A 10-per-cent ointment of salicylic acid made up with lard and a little oil of turpentine is absorbed through the skin and has a marked local anodyne action, both when rubbed in and used as a dressing; but it is, on the whole, not suitable for ordinary use, as it damages the epidermis.

Stockman has also used largely sodium salicylate, 2 or 3 grains in 10 minims of water, injected locally by means of a hypodermic syringe. This lessens or abolishes pain at the spot almost at once, but the effect is very transient and lasts only for about half an hour to an hour. The amount which can be given locally by ionic medication is also too small to be satisfactory in its effect.

None of these substances can be absorbed through the skin in such amounts as to influence materially the general infection, and hence their value is merely in lessening local pain.

MEDICAL ASPECTS OF PULMONARY SURGERY.

LANDIS in the *Pennsylvania Medical Journal* for April, 1913, says this in regard to surgery in pulmonary tuberculosis: With the perfection of a technique for the performance of operation on the thoracic viscera, it is not surprising that surgeons have turned their attention to pulmonary tuberculosis. The simplest procedure and the only one which at the present time can be favorably considered is the production of an artificial pneumothorax. The operation is easy and, so far as can be judged from the results published, bids fair to become an established method in the treatment of a certain type of cases.

The production of an artificial pneumothorax is not to be recommended in cases

with incipient or moderately advanced tuberculosis, if an arrest of the disease is being brought about by the usual hygienic and dietetic measures now employed. Robinson and Floyd advise pneumothorax therapy in that group of cases advanced beyond the promise of relief of methods of hygiene, and before the disease has advanced to the stage when a fatal termination may be expected at any time.

Patients with frequently recurring attacks of hemoptysis have been markedly benefited by the production of an artificial pneumothorax. The operation is also admissible at times in hopeless cases for the alleviation of symptoms. The other operative procedure for the relief of tuberculosis involves the resection of a portion of one or all the ribs on one side. In some instances the operation is quite extensive. The number so far operated on is too small to form a judgment as to how permanent a place this procedure will eventually have in healing the disease. All that can be said at present is that even advanced cases of pulmonary tuberculosis stand operative interference surprisingly well, the immediate mortality in sixty-two cases operated on by Sauerbruch, Wilms, and Friedrich being fourteen and eight-tenths per cent.

INFLUENCE OF THE OVARY AS AN ORGAN OF INTERNAL SECRETION.

GRAVES in the *American Journal of Obstetrics* for April, 1913, says that from the present status of our knowledge concerning the physiology of the ovary we seem justified in drawing the following conclusions:

1. Anatomical evidence makes it probable but not incontestable that the ovary is an organ of internal secretion.

2. Infantilism is not a result of ovarian deficiency, but is a local or general manifestation of a hypoplastic constitution in which the ovary may or may not share incidentally.

3. After sexual maturity the ovary exercises a trophic influence over the other internal and external genital organs.

4. There is evidence to show that the ovaries preside over menstruation by an internal secretion which has a selective action on the endometrium; and that abnormal uterine bleeding may be due to a hypersecretion of the ovaries. This evidence is not incontestable.

5. Transplantation of ovarian tissue has not as yet proved to be of great practical value in the surgical treatment of gynecological patients.

6. Castration of sexually mature women directly causes vasomotor symptoms typified by hot flashes in 80 per cent of cases.

7. Definite psychoneuroses are not directly caused by castration, but such symptoms if present are due to other causes that produce physical or mental pain or discomfort.

8. Ovarian extract is invaluable in the treatment of the vasomotor disturbances following castration. Its value in the treatment of other gynecological conditions is problematical.

THE RESULTS OF THE SERUM TREATMENT IN THIRTEEN HUNDRED CASES OF EPIDEMIC MENINGITIS.

FLEXNER writing in the *Journal of Experimental Medicine* of May 1, 1913, says that the data brought together in his report have been gathered from a wide territory and for a period extending over several years. The antimeningitis serum was first employed in 1906, and the latest figures relating to its use included in this report were furnished in 1912. There is no longer doubt that the serum has come to be applied under conditions fairly representing all known manifestations of epidemic meningitis. Hence the test of the serum treatment may be regarded as having been a rigorous one. The initial difficulties surrounding the administration by direct subdural injection have been largely overcome and doubtless will be still further mastered. Already the serum is being successfully applied in private as well as in hospital practice. This gain will probably be reflected in a still further diminution of the mortality, since early

injection plays such a large part in determining the results achieved.

The 1300 cases studied in this report are a part only of a far greater number of cases actually treated with the serum supplied by the Rockefeller Institute. It was not found possible to secure histories of all the cases treated; but there is no reason to suppose that the results of the analysis would have been essentially different if reports of a still larger number of cases had been returned. The decision arrived at is not based upon statistical computations alone, but upon objective data as well that are not readily misinterpreted.

The conclusion that follows was first stated in 1909 as the result of an analysis of 400 serum-treated cases. It is supported by the study of the larger series of cases just presented.

"In view of the various considerations presented, the conclusion may be drawn that the antimeningitis serum, when used by the subdural method of injection, in suitable doses and at proper intervals, is capable of reducing the period of illness; of preventing, in large measure, the chronic lesions and types of the infection; of bringing about complete restoration of health, in all but a very small number of the recovered, thus lessening the serious, deforming, and permanent consequences of meningitis; and of greatly diminishing the fatalities due to the disease.

CHRONIC INTESTINAL STASIS.

In the *British Medical Journal* of April 19, 1913, HERTZ says it is not at all uncommon to be told by a patient, who is in the habit of taking large quantities of aperients for constipation, that the lassitude, headache, and abdominal discomfort from which he suffers are better if he forgets to take his aperient and his bowels are not opened. His symptoms appear to be due to the absorption of poisons from the abnormally fluid feces in his colon, and are therefore a result of the diarrhea produced by his aperient, and not a result of his constipation. It is important before examining such cases with the *x*-rays that the patient should not take any aperient for some days. When this has been done, Hertz has been able to demonstrate the complete absence of intestinal stasis, although many of the patients were contemplating some operation for relief of their supposed constipation. The bismuth reached the rectum in the normal time, but the patients had become so convinced that their bowels would not act without help that they made no attempt to open them, as they did not feel the violent desire which resulted from the use of their aperients. When it was explained to them what the *x*-rays had shown, and also that a finger inserted into the rectum proved that it was full of feces only waiting to be expelled, they were persuaded to try to open their bowels, and succeeded in doing so. A gentleman, thirty-eight years old, whom Hertz saw in April, 1910, was convinced in this way, and he has had his bowels opened regularly ever since without treatment of any sort, although up to that time he was taking an enormous quantity of aperients, and was sent to see Hertz for an opinion as to whether the colectomy which had been advised ought to be performed.

It is well known that the frequency of the stools gives no certain evidence as to the existence of intestinal stasis. Thus a condition analogous to retention of urine with overflow may occur in the bowel, the patient being exceedingly constipated, but passing numerous small stools every day. On the other hand, in the condition aptly described as "greedy colon" by Sir James Goodhart, the patient may only open his bowels once every three or four days, and yet be perfectly healthy; in such cases Hertz has found with the *x*-rays that the passage through the bowels is generally normal in rate, but the quantity of feces formed is so small that several days may be required for sufficient to collect in the pelvic colon to give rise on entering the rectum to the call to defecation.

By giving some charcoal with breakfast one morning, and watching for its appearance in the stools, the total time taken in its passage through the alimentary canal can be

ascertained; but this method gives no indication as to the part of the bowel in which stasis occurs.

We are therefore driven to the conclusion that the only reliable means of determining whether a patient is suffering from chronic intestinal stasis and of ascertaining exactly what parts of the alimentary canal are at fault is a series of examinations with the *x*-rays. It is, however, first necessary to determine whether large doses of bismuth salts interfere with the normal activity of the bowel, for it has rightly been pointed out that they are among the best drugs for combating certain forms of diarrhea. In order to test this point Mr. F. Cook and Mr. E. G. Schlesinger at the suggestion of Hertz took charcoal on a number of occasions at different hours in the day, their bowels being regularly opened in the morning at about 9 A.M. By this means they found the shortest time required for the charcoal to appear in their feces. On repeating their investigations with two ounces of bismuth oxychloride added to the charcoal they found that the time was unaltered. Hertz has since been able to confirm these experiments in a number of constipated individuals. He believes that bismuth salts only influence those cases of diarrhea in which excess of sulphuretted hydrogen has developed as a result of abnormal putrefaction; this gas is a powerful stimulant to the intestinal movements, but is rendered inert by combining with bismuth. In common with many others, he now uses barium sulphate instead of bismuth oxychloride, as it does not combine with sulphuretted hydrogen, and under no conditions affects the motility of the stomach or intestines; it is equally non-poisonous, the shadow it throws is as dense as that of bismuth salts, and its cost is only one-twentieth.

In some unpublished investigations Dr. Rippmann and he found that the weight of the bismuth or barium mixed with the food produces a very slight degree of distortion of the stomach, which is greatly increased in cases of atonic dilatation; it also tends to drag the cecum and the end of the ileum downward. It is therefore clear that the smaller the dose used the more accurate will be the results obtained by means of the *x*-rays. Except in very fat individuals, two ounces of bismuth oxychloride or barium sulphate are ample for all practical purposes; the use of six ounces trebles the error.

Valuable as the *x*-rays are in the investigation of the motor functions of the alimentary canal, they have led to many erroneous diagnoses, owing to a want of appreciation as to what constitutes the normal. In a recent discussion at another society cases were related by various speakers, in which a diagnosis of intestinal stasis was made, although the details given of the time at which different parts of the bowel were reached fell well within the normal limits. Thus one speaker concluded that the presence of bismuth between the hepatic flexure and the iliac colon thirteen hours after the meal in one of his cases suggested some mechanical difficulty in the left iliac fossa. It would be rare to find less evidence of "stasis" in a normal individual.

The first examination of a case of intestinal stasis by means of the *x*-rays was made by Hertz in 1907 after his fellow-workers and he had examined a considerable number of normal individuals. The figures which they published of the average time taken for bismuth to reach different parts of the bowel in normal individuals have since been regarded as the standard, and any case in which delay, when compared with this standard, has been observed, has too often been diagnosed as an example of intestinal stasis. The error of this is obvious when it is remembered that their figures represented the average of considerably divergent times, and more extended experience has convinced him that the normal limits are even wider than they originally supposed. Thus in fifty-eight normal individuals examined by Alan Newton seven hours after a bismuth meal, the furthest point reached by the bismuth was the cecum in four, the ascending colon or hepatic flexure in twelve, the transverse colon or splenic flexure in thirty-one, the descending or pelvic colon in eleven.

Though the average furthest point is in the transverse colon, corresponding to what they described in 1907, it would clearly be incorrect to say that stasis was present in an individual in whom the bismuth had not reached beyond the hepatic flexure after seven hours.

GLYCOSURIA.

In discussing this topic in the *British Medical Journal* of March 22, 1913, RANKIN states that while it is true that carbohydrates ought to be limited in all cases of glycosuria, it is no less certain that in most instances patients do best with a moderate carbohydrate element in their diet, and in every case the problem to settle is how far starch, in one form or another, may be given without increasing the urinary sugar. For this purpose the first point to determine is the extent to which the glycosuria depends upon carbohydrate intake. If the patient be put for a week on a diet from which all sugar and starch is rigidly excluded, we will by a quantitative examination of the urine ascertain the minimum to which the sugar may be reduced by carbohydrate starvation. During the following week he may have added to his daily menu one baked potato and a small quantity of gluten or other so-called non-starchy bread. And, in passing, it may be mentioned that most of the biscuits and breads advertised as being practically starchless are found to contain carbohydrate in a definite and often considerable amount. The foodstuffs prepared by Callard, von Abbott, and Blatchley are among the most reliable to be obtained in England, but there are many others which, though they contain a greater amount of starch, are more palatable, and are preferable to, because they contain less starch than, ordinary bread. Almond flour, cocoanut flour, and gluten flour may all be used for the preparation of cakes and biscuits to replace ordinary bread.

At the end of a week the urine should again be tested and the starchy element increased or diminished according to the effect upon the sugar output which is found to have occurred. In some instances oatmeal is better tolerated than any of the other cereals, and its influence ought to be ascertained whenever the addition of potato is proved to produce no bad effect. The diminution or annihilation of glucose in the urine is not the only, nor always the safest, criterion of improvement. It is therefore always imperative to keep an observant eye upon the general nutrition. Whatever restriction in the diet be adopted, it is only justified if its modifying effect on the sugar excretion is accompanied by a maintenance of the general health. Continual polyuria and thirst, together with a progressive loss in weight, are evidences that all is not going well, and care must be taken that as the result of too severe dietetic restrictions the diminished amount of sugar is not too dearly paid for. The presence of acetone or diacetic acid ought in all cases to be looked for, and when found should be regarded as an urgent indication for a readjustment of the diet-plan, and probably for an increase in the carbohydrate allowance.

In the matter of dietetic treatment there is one plan which has not received so much attention as it deserves, namely, the effect to be derived from repeated short periods of absolute starvation. In the public mind it is a rooted conviction that complete abstinence from food even for a limited period must inevitably lead to such failure of strength and vigor as to make it a dangerous experiment. Experience proves, however, that this is not the case, and when we reflect how in all acute diseases and in some that are chronic, nature withdraws all ordinary appetite for food, and leaves the patient to live for a time wholly upon himself, there is little cause for surprise that popular opinion has arrived at erroneous conclusions. Guelpa, of Paris, has devoted considerable attention to the value of starvation methods in several disorders of metabolism, and though his enthusiasm may have carried him to generalizations that are too sweeping to be altogether justified by the evidence, there is ample proof that the effect of such a plan is often surprisingly successful in reëstablishing a better meta-

bolic balance. Rankin has recently devoted some attention to temporary starvation in cases of glycosuria, and the results have justified him in believing that though it may not be a means of cure it has a striking effect in producing amelioration of the symptoms. The explanation is probably to be found in the fact that during the starvation period the various internal secretions are afforded a chance of reëstablishing that proper balance among themselves upon which metabolic integrity seems to depend. At any rate it is certain that in cases of glycosuria complete abstention from food over a period of two or three days has a definite influence not only upon the amount of urine excreted, and of the sugar it contains, but also upon the subjective discomforts that sometimes accompany this condition.

THE PREVENTION OF FOOT-STRAIN.

Osgood (*Boston Medical and Surgical Journal,* March 13, 1913) alludes to certain occupations in which foot-strain is sufficiently common to represent a frequent cause for temporary and sometimes long-continued disability. Thus there is a policeman's heel, and nurses in their hospital training are a class whose feet are very susceptible to strain, since they have long hours and walk on hard surfaces, and also since they adopt a different gait in their attempt to walk quietly. It is generally recognized that there exists no definite relationship between the height of the arch and the strength of the foot. Moreover, it can scarcely be determined from inspection and palpation alone as to the potentiality of strain in symptomless feet, yet the ability so to do may be of considerable importance. Some years ago Osgood and Legg made independent studies of the comparative strength of the adductors and abductors of the foot. By an unopposed pull of the abductors the foot is drawn into an outwardly rotated position, the calcaneoscaphoid ligament is stretched, and the plantar arch depressed. Foot-strain would, therefore, be favored if the abductor group, consisting chiefly of the peroneals, controlled the position. By an unopposed pull of the adductors the foot is inwardly rotated, the inner border shortened, and the arch made higher. These adductors, consisting chiefly of the anterior and posterior tibial and the flexor longus hallucis, may be considered, therefore, as the conservers of the longitudinal arch.

Flexible feet only were measured, and these were arbitrarily grouped under four headings:

1. Normal feet.
2. Pronated feet without symptoms.
3. Pronated feet with symptoms.
4. Acute foot-strain, usually with a valgus position.

The average ratio of the adductor pull to the abductor pull in normal feet was found to be 10 to 8.2 in favor of the adductors; in pronated feet with symptoms 10 to 10.8 in favor of abductors; in acute feet with valgus 10 to 12.2 in favor of abductors.

Thereafter a study was made of the feet of the probational nurses in the Massachusetts General Hospital. The first records were taken in 1907 and the last in 1912. Muscle tests were taken with the patients seated and with the rotation of the thigh controlled. The important part which the rotators of the thigh play in controlling the position of the foot has been emphasized by Lowman. With the foot fixed on the ground, for instance, the contraction of the outward rotators would raise the inner border, and *vice versa*. The force is moreover supplied by the long arm of the lever. All probationers have been examined during their first weeks of hospital life. They have had explained to them the reasons for wearing during their working hours proper shoes. Lasts suitable to their individual needs with and without Thomas's heels have been prescribed. Eighty-four of 133 taken chronologically and followed for at least a year were considered to need advice. The simple cases of strain and those who were believed to possess the potential of strain have been thus treated. More severe cases were reported to the outpatient department, and appropriate treat-

ment was carefully planned. Sixty-four showed a normal muscle balance; 69 showed an abnormal muscle balance; 19 reported to the out-patient department at some period of their course complaining of foot symptoms. Twelve, or 60 per cent, of this 19, reported by request after the first examinations, were treated and never more heard from. Seven reported for trouble later in their course. Of these two were cases of infectious arthritis, one was acute strain of the anterior arch, leaving four reporting for what seemed to be typical foot-strain. Of these four, two had an abnormal muscle balance discovered at the first examination and had ignored the advice given them; one later was obliged to give up training on account of persistent rheumatic trouble, and the remaining one had just returned to duty after a long period of comparative inactivity, and was wearing an especially vicious shoe. Only six cases have been treated with plates. Only two cases of the 133 reported later in their course for foot symptoms showed at their initial examination normal muscle balance. One of these subsequently gave up her training on account of rheumatism, and the other improved after giving up her deforming shoes.

In contrast to the nurses' examinations are some made of the Wellesley College students, a large majority of whom showed that the abductors represented the strongest group. There were also many faulty positions and many faulty shoes. It was reported that a surprisingly small number of the girls were able to take a walk without general and foot fatigue. Of the Smith College girls it was reported that 80 per cent showed faulty position and 10 per cent had foot pain. The nurses showed a more normal and balanced class of foot, also were more rationally shod. Among the nurses in the last report there was but one who had an approximately normal muscle balance at entrance who has reported for foot-strain. This patient was one with a stronger adductor pull who had had no previous trouble, but who had a very relaxed foot with pronation and actual valgus in standing, and who in spite of the normal balance had been advised to have Thomas heels but had disregarded the advice. The onset of her trouble was acute, and had disappeared, when seen, from one foot, and was associated with heat and swelling about the internal malleolus in the other, strongly suggesting a toxemic arthritis. During the past year no nurse, so far as is known, has been off duty for pure foot-strain. It seems probable that by these early examinations of the foot and the determination of muscle balances a certain amount of preventive medicine may be successively employed to the end of diminishing individual discomfort and increasing institutional efficiency.

NEOSALVARSAN.

Bowen (*Boston Medical and Surgical Journal,* May 1, 1913) quotes from the *Bulletin de la Société Francaise de Derm. et de Syph.,* November and December, 1912, as follows:

At the November, 1912, meeting of the French Society of Dermatology and Syphilis, Leredde reported his studies of the accidents from neosalvarsan, the technique, and the strength of the injections. He considers that it has now been abundantly proved that most of the dangers from salvarsan are either wrongly attributed to it or are due either to faults of technique or to a disregard of formal indications. Salvarsan is dangerous only in the hands of physicians who employ it without having learned its use thoroughly. The technique of the injections has been settled, while the question of dosage remains still a matter for study. Leredde counsels a gradual, progressive increase in the amount injected. He lays stress on the fact that prudence should be exercised in the treatment of patients afflicted with simple ulcers of the stomach and duodenum, as these ulcers may be syphilitic, and death be caused by Herxheimer's reaction, following too energetic treatment at first, as is the case sometimes with those who have a latent syphilitic meningitis.

Should neosalvarsan be substituted for

salvarsan in the treatment of syphilis? The preparation of the injections is easier, and this in itself removes certain possible causes of accident. Also a larger amount may be injected. But since the introduction of neosalvarsan certain accidents, sometimes of a serious nature, have been met with, which were not reckoned with in the earlier periods of salvarsan therapeutics, so that a number of Germans and Belgians have abandoned neosalvarsan and returned to salvarsan. Leredde does not agree with these latter. He considers that a large number of the accidents from salvarsan, particularly the paralyses, are explained by a peripheral neuritis. By a closer study of the causes of the accidents from neosalvarsan, as of the accidents from salvarsan, the means of avoiding them will be better and better recognized, and in this way a judgment may be formed as to which of the drugs is less dangerous. As to neosalvarsan, the period of experimentation has not yet exceeded six months, and is, therefore, by no means concluded. The technique which was originally recommended by Schreiber is most dangerous, more by the frequency of the injections than by the size of the dose, and should be completely abandoned. The solution of neosalvarsan, prepared antiseptically with distilled water sterilized after distillation, should be immediately injected into the veins without useless exposure to the air. The injections should be separated in every case by a minimal interval of five days. The doses should not be, on principle, larger than the corresponding doses of salvarsan.

If one desired not only to heal the lesions but to attain a sterilization of the syphilis in a way both prudent and energetic, Leredde advises his method of progressive dosage. At the outset of the treatment successive injections, at intervals of five days, are to be made of 0.30, 0.60, 0.90 neosalvarsan; in a later series 0.60, 0.90. Larger doses should be exceptional and reserved for cases of rebellious nerve syphilis, in which normal doses have previously been well borne. The contraindications of neosalvarsan are the same as those of salvarsan. Neosalvarsan is dangerous in non-syphilitic nephritis, and in degenerative lesions of myocarditis. In excessively alcoholic subjects it may also be dangerous on account of latent changes in the liver. It should be used with great caution, and in slowly progressive doses, in patients with simple ulcers of the stomach and duodenum, or with ulcerative lesions of the larynx. It may be used in tabetics in the cachectic period or in advanced general paralytics, but in these latter cases, as well as in those in which there are signs of uremia or an asystolic tendency, the justification of the procedure lies in the extreme gravity of the cases.

At the same séance of the society, Darier presented an elaborate report of two cases of death after injections of neosalvarsan, with a critical review of analogous cases. One of these cases was the subject of a tertiary syphilis, the other was in the secondary period; both had been treated with mercury recently and thoroughly. In the course of a series of intravenous injections with neosalvarsan they were seized, after the third injection, with nervous phenomena of a very serious nature. In the first case, that of a vigorous man, without any organic trouble, the accidents occurred in the course of the third day after the injection and resulted in death in nineteen hours. In the second case, that of a weakly, tuberculous, and albuminuric subject, with a malignant ulcerative lesion of the pharynx and a double iritis, the nervous phenomena began fifteen hours after the injection, continued for three days in a very exaggerated form, then quickly subsided, to be followed in five days by a fatal tubercular bronchopneumonia. The clinical symptoms in the two cases were almost exactly similar—a sudden seizure with epileptiform convulsions, succeeded by a deep stupor, bordering on coma. Nothing of great importance was found at the autopsies. Darier then enters upon a discussion of the probable pathogenesis of these nervous phenomena with a view to avoiding them, if possible, in the future. He concludes that the only plausible explanation is in the supposition

that in some cases at least there is a retention of the drug, on account of decomposition and faulty elimination. After reviewing the cases of serious or mortal injury following the use of salvarsan, he sums up his conclusions as follows:

Although neosalvarsan is not generally toxic in the mild doses usually employed, it must be borne in mind that its use is not unattended with danger. Neosalvarsan appears to be on the whole more dangerous than salvarsan. In a not inconsiderable number of cases, neosalvarsan may produce dangerous nervous phenomena, especially encephalomyelitis and progressive neuritis of arsenical type. In very exceptional cases death has ensued under such conditions that an acute arsenical intoxication may be fairly assumed to be the cause. These accidents are probably owing to an accumulation of the drug, following decomposition in the organism and insufficient or retarded elimination. At the present time it is not possible to avoid these accidents surely by any known means or precautions, but the following rules are recommended for adoption: (1) Eliminate all subjects who present any visceral signs, and especially those in which there is any suspicion of an affection of the kidneys or liver. (2) Always begin with a minimal dose of .20 to .30 at the most and increase this dose with great caution. (3) Never repeat the injections at an interval of less than five or seven days at the least, or without being sure that the first injection was not followed by any symptom of intolerance, or that the urinary elimination of arsenic has been normal.

At the meeting of the same society on December 5, 1912, Gaubeau reported a case of late accident following a treatment by neosalvarsan aggravated by application of a paste of zinc oxide. The subject was a man of forty-two, without any sign of organic lesions. He was given four injections of neosalvarsan between the 24th of September and the 11th of October. On the 20th of October there was an attack of general urticaria with severe itching. On the 3d of November the patient was found confined to his bed with an intense desquamative scarlatiniform dermatitis, with affection of the mucous membranes. There was scarcity of urine, but no sugar or albumin. Upon questioning it was found that at the beginning of the present attack he had been covered from head to foot with a paste of oxide of zinc, and that after these applications the skin got worse and assumed the character of a scarlatiniform dermatitis, accompanied by fever, digestive disturbances, and symptoms of general gravity. Death took place on November 7. The belief expressed was that the patient died of arsenical intoxication due to the suppression of the eliminating functions of the skin by the use of the zinc paste. This opinion is fortified by some experiments made upon animals. Hence the conclusion is reached that in the case of all patients treated with salvarsan or neosalvarsan it is important that the functions of the skin should be in good order; this may be attained by exercise in the open air before the injections, by hydrotherapeutics, massage, etc. It is also important in such cases, as well as in those affected with toxic or infectious erythemas, and whenever from any cause the renal functions are insufficient, that the greatest care should be taken to avoid the application over large surfaces of thick pastes and occlusive dressings.

SURGERY OF THE THYROID GLAND.

Berry (*Lancet,* March 1, 1913) in his Lettsomian Lecture, after expressing his disbelief in the importance of the parathyroid glands, announces his conviction that exophthalmos is solely due to the fat deposit in the orbit, his skepticism as to the beneficial effects to be derived from the Beebe serum, and notes that the mortality of Graves's disease medically treated is not very high. Most of the patients who recover do so only after a period of prolonged ill health and after great distress. In regard to the previous study of cases Berry quotes Plummer to the effect that in the great majority of cases the disease runs a fairly definite course as regards the sever-

ity of the intoxication. "If the average course of the disease be represented by a curve, the greatest height of the intoxication is found to be reached during the latter half of the first year, and then rapidly drops to the twelfth month. In many instances it reaches the normal base line during the next six months; more often it fluctuates with periods of exacerbation for the next two to four years. Secondary symptoms and exophthalmos may remain, but the active course rarely continues over four years without distinct intermissions. The ascent may be gradual, sudden, or irregularly marked by many secondary curves. Plummer further states that the operation is done with the greatest safety in the early stage of the disease, or much later, when the period of greatest intoxication has passed by. At Rochester the average duration of disease at the time of operation is about two years. In determining the degree of intoxication Plummer and Mayo attach much importance to the amount of muscular weakness which is present. The latter is often very marked in the quadriceps and is easily tested by asking the patient to step up on a low stool. Dilatation of the heart exceeding one inch they regard as a serious condition, while that extending to an inch and a half may be expected to give a percentage of unavoidable mortality for the radical operator of partial thyroidectomy. In addition to these indications Berry regards albuminuria, glycosuria, diarrhea, a constantly irregular pulse, and low blood-pressure as conditions which should lead the surgeon to at least postpone operation, and if these conditions cannot be remedied by the medical treatment operation should not be performed at all. Of all chronic complications marked dilatation of the heart is perhaps the most common and the most serious. Ligation of the superior thyroid artery is chiefly useful as a means of ascertaining the susceptibility of the patient to operation rather than as a means of cure. When it is doubtful whether the patient is fit to undergo the larger operation of partial thyroidectomy, it is well to begin with a preliminary ligation of one superior thyroid. If the reaction from this is slight, partial thyroidectomy can probably be carried out with safety a week or two later on the other side. If the reaction be severe, the best plan is to tie the opposite thyroid before resorting to thyroidectomy, or possibly be content with ligation alone. As to anesthesia Berry holds that local analgesia is preferable. After that from the point of safety he places ether by the open method.

Ligation of the thyroid arteries has a well-established position in the surgery of exophthalmic goitre. It is a procedure, however, not entirely free from risk. Of 17 deaths in Kocher's large series, five occurred after ligation of arteries. The chief difficulty is from the overlying superficial veins, which sometimes are numerous and easily wounded. An oblique incision is made along one of the natural creases of the skin. The best guides to the artery are the omohyoid muscle, at the outer border of which it is usually tied, and the upper pole of the gland itself. If any difficulty is experienced in finding the latter the patient may be asked to swallow. The upward movement of the gland will render its detection more easy. The ligature should include the upper pole of the gland. For exophthalmic goitre, if the gland be excised Berry advises ligation of the main artery well outside the recurrent nerve. The handling of the gland seems to have no particular power upon acute postoperative thyroid intoxication. The most important point in the after-treatment is the administration of large amounts of water immediately following operation either by mouth or by the rectum.

In summing up our certain knowledge of the dangers and advantages of the operative treatment of Graves's disease, Berry holds that operations upon exophthalmic goitre are undoubtedly more dangerous than similar operations for most other kinds of goitre, but that the dangers may, however, be greatly reduced by careful attention to details, especially in the selection of cases for operation, and in the choice of the time at which the operation should be

performed, in the preliminary treatment of the patient, in the methods of operating, and in the after-treatment.

THE TREATMENT OF BONE AND JOINT TUBERCULOSIS.

PERTHES (*Die Therapie der Gegenwart,* Jahrg. 53, Heft 12) states that the age of the patient plays a very important part in the treatment of tuberculosis of the bones and joints. In children the tendency to healing is much greater than in adults. It is also true that resection of joints is especially unfavorable in children; therefore, in these conservative treatment is preferable. The choice of treatment depends further upon the joint involved and upon the prospect of a good functional result. Whereas resection is adapted to the knee-joint, it does not give favorable functional results in the wrist- and the hip-joint, while the hip-joint does well with rest and relief from weight-bearing and the wrist-joint responds well to injections of iodoform.

As an indication for treatment the condition of the joint as determined by *x*-rays plays an important rôle. The pure synovial form without abscess or without bony changes is treated conservatively. When there is extensive bony involvement operation is indicated.

In very unfavorable general condition or in well-advanced lung tuberculosis, for example, one may find it necessary to forego a resection and perform an amputation, for it has often been observed in such cases that the general condition improves with surprising rapidity after the diseased joint has been disposed of. The result of treatment already carried out in a conservative manner may also afford a basis for decision as to further measures. Many surgeons consider that, if conservative treatment has failed, operation should be done. The author would agree with this in case no more important consideration came in question. As regards the social condition of the patient, it may be said that in a laborer, for example, with a knee-joint tuberculosis, who can go into the hospital for a limited number of weeks only, it is impossible to experiment with rest and iodoform injections for months or to carry on the Bier hyperemia for a still longer time, when we know that by means of a joint resection he can again be made able to work in two or three months. These different conditions combine themselves in various ways so that it is impossible to formulate a general rule. Each case must be studied individually.

TRANSVERSE COLOSTOMY AS THE OPERATION OF ELECTION.

MCGAVIN (*British Medical Journal,* May 10, 1913) speaks with some enthusiasm of the comfort accruing to patients who have had performed upon them transverse colostomy, reporting in corroboration of his contention some 26 cases, 20 done by the transverse method and six by the iliac. He holds that iliac colostomy has little to recommend it. The anatomical position of the transverse colon at once disposes of the effect of gravity in promoting extravasation; indeed, it does more, for since of the fixed points, the splenic and hepatic flexures, the former occupies a higher position, the colon passing between them, lying in the position of a hammock, it is clear that the passage of the fecal mass toward the stoma will, if this be placed to the left of the middle line, be accomplished against the force of gravity, consequently neither extravasation nor prolapse is likely to occur. The writer has never seen either of them in his own cases when once the belt and plug has been fitted; and with regard to prolapse Allingham has said: "Prolapse might happen, but we have not yet seen it, and it would scarcely be so likely to occur as in other places, for the transverse colon is in a way fixed at its hepatic and splenic flexures, and would thus tend greatly to prevent prolapse of the gut through the transverse opening."

The portion of the bowel between the stoma and the hepatic flexure, from its position, acts as a receptacle, which, like the rectum, can be conveniently voided from time to time, and it is very remarkable to

see the excellent control patients ultimately acquire over this act, the bowels being opened night and morning with great regularity, the patient gradually becoming aware of the need to void the contents of the colon. Such perfect control the writer has never seen in any case of iliac colostomy.

The sphincter provided for the stoma is as nearly perfect as anything can be. The opening should be made two inches to the left of the linea alba, and the same distance below the costal margin. There are excellent reasons for the efficiency of the sphincter when made at this point. The rectus muscle here is thicker and stronger than below the umbilicus, thus forming a deeper and firmer canal; it is reënforced in front and behind by powerful fibrous aponeuroses, which tend to moor the stoma in place. This anchorage is further strengthened by the linea alba internally, and the linea transversæ, one of which should fall above and one below the stoma. Owing to the shorter fibers of the rectus lying between these latter, the grip of the "sphincter" at the stoma is much more efficient than in the iliac operation.

The situation is admirable for the fitting of a belt; for not only are the loins here of a shape to hold the belt without slipping, thus doing away with braces, bands, etc., but a degree of pressure can be supported here with comfort which would be impossible below the umbilicus, this pressure being rendered possible by the presence of the costal margins and the presence of liver, and the firm nature of the abdominal wall.

The position of the transverse colostomy opening renders it extremely easy for the patient to cleanse and care for it; no matter how obese he may be, the opening is never overhung by fat, as may be the case with iliac colostomy. The skin here is thick and not easily excoriated by the moisture of the mucous membrane. The evacuation of the bowels is most simply accomplished, for it can be performed in the sedentary attitude, the body being inclined forward and a receptacle placed over the stoma. Owing to the depth of the intramuscular canal and the length of the mesocolon, an excellent spur can be made when the operation is done by Maydl's method. That this spur is always better than that of an iliac colostomy the author does not claim, but he has already given his reasons for the occasional defects in the spur formation in the latter, which defects are invariably absent in the transverse operation.

Besides this latter question of spur formation, removal of the colostomy to a distance from the site of the growth offers one other great advantage; there is little doubt that the offensive odor of a colostomy is largely due to the proximity to and the ease with which the foul débris of an ulcerating growth is discharged from the iliac opening. The writer has seldom, if ever, known a transverse colostomy to be in the least offensive, but he has never known an iliac one that was not.

There is one other point in which transverse has a great advantage over iliac colostomy—that is, in cases of intractable fistula of the rectum and anus, in which a cure has been effected by temporary colostomy; the ultimate reconstitution of the colon is effected far more easily and far more safely and certainly in the case of the former than in that of the latter operation.

Again, it is contended that control must be more difficult, since the motions in the transverse are more fluid than in the descending colon. This the writer can answer from his own experience: it is a purely theoretical objection; there is so little difference in the contents of the two sections that there is nothing to choose between them. It is quite obvious that the life of a patient, no matter of what variety his colostomy may be, can never again be regarded as normal. That is to say, he must always so regulate his diet and fluid intake as to favor constipation rather than diarrhea, and so keep the excreta as firm as possible.

Mr. Paul has made the objection that the position is not a good one in view of the possibility of a subsequent laparotomy; neither is any colostomy, iliac, lumbar, transverse, or cecal. But since these operations are commonly reserved for pa-

tients who are already doomed, the prospect of their ever having to undergo such laparotomy must be very small indeed.

TREATMENT OF ACUTE GONORRHEA.

HINZE (*St. Petersburger medizinische Zeitschrift,* Jahrg. 37, No. 22) states that the efficiency of a given treatment for acute gonorrhea is judged by certain principles. In the first place every form of therapy must be so carried out as to render the course of the disease as mild and harmless as possible for the patient—that is, it must be capable of keeping the disease localized in the anterior urethra, and in case it has already spread to the posterior urethra, it must prevent the complications which are known to follow such extension of the disease. It is also important that the duration of the treatment be as short as possible and at the same time agreeable to both the doctor and the patient.

Pathological changes of chronic urethritis occur in the urethra in direct proportion to the duration of the disease process. The treatment here discussed is that used by the author for the last eight years and differs in no important way from that recommended by Neisser in 1897. As soon as the diagnosis has been established injections are begun by the patient. The first day or two the injection fluid is held in the urethra five to ten minutes, and the time is gradually increased until by the second week it is held for one-half hour, and is then kept at this throughout the period of treatment. Injections are made not less than three times a day at equal intervals and kept up in this way to the end of treatment. Of the various silver preparations protargol ¼ to 3 per cent, albargin 0.1 to 0.3 per cent, and ichthargan 0.01 to 0.2 per cent gave the best results. Even in hyperacute cases injections are started at once, but for the first few days a 0.1-per-cent solution of mercurol is used as it is milder, and at the same time seems to abate the discharge more quickly. Internally the balsams are used only the first few days, while the patient is perfecting himself in the injections and while the danger of spread to the posterior urethra is greatest. After three to four weeks the injections are discontinued for twenty-four hours and the urethral secretion examined microscopically. If gonococci are found, another course of injections is instituted; if none are found, the examination is repeated at intervals, and if none are found in the course of three weeks the patient is pronounced cured.

In acute posterior gonorrhea the general plan is the same, but here the balsams and diuretics are more strongly indicated. The injection fluid is made less strong. By holding the fluid for a long time in the urethra several drops of it enter the posterior urethra and exert a beneficial influence. In case a complication occurs, injections are stopped only until the height of the complication is reached, when they are started and kept up for three to four weeks. In the majority of cases spread of the infection to the posterior urethra was prevented. In most cases a cure was effected in three to four weeks, but some resistant forms of the disease persist in spite of the most energetic treatment for as high as three to four months. Whether this prolonged course was due to increased virulence of the germs or to an especially unfavorable distribution in the crypts and ducts of the glands could not be determined.

TREATMENT OF GALL-STONES.

FINK (*Prager medizinische Wochenschrift,* Jahrg. 38, No. 1) states that the symptoms of gall-stone disease take the form of colic, hydrops of the gall-bladder, empyema of the gall-bladder, or perforation; sometimes the inflammation which is set up extends to the liver itself. Also other organs, such as the stomach, pancreas, and the appendix, may be involved and give rise to symptoms. The most frequent cases observed are those in which colic is the prominent symptom. In certain cases in which the patient is suffering from a primary attack it is impossible to say whether it will reach a degree of severity to justify operation. The author believes that, if the

attack shows a tendency to persist, operation should be done. Frequently it is found that in the absence of operation the attack hangs on, morphine is required, the appetite is lost, the weight decreases, and the patient is disabled. Perhaps by long-continued medication the trouble may limit itself to tenderness of the gall-bladder or there may be disturbances of function of the liver, stomach, pancreas, or appendix. A feeling of pressure in the stomach with deep-seated pain is a frequent symptom of the presence of stone in the gall-bladder. Sudden, severe pain with fever and chill, and extreme tenderness on pressure, indicate infection of the gall-bladder.

The immediate indication is rest in bed with the application of the ice-bag, but this brings only slight relief. Any considerable delay may result in spread of the infection to the surrounding tissues and even into the peritoneum, and finally abscess formation. When the inflammation extends to the liver, this organ becomes enlarged to two or three fingerbreadths below the costal border and very painful on pressure. When the inflammation extends to the neck of the gall-bladder it constitutes the type of affection which involves the common duct and the pancreas. As a result of swelling of the common duct icterus supervenes. Cases of this sort resemble those in which the stone lies in the common duct, and by operation only can one determine the difference. When the stones are lodged in the pole of the bladder a thinning of the wall occurs and perforation is apt to take place.

Still another form of the affection is that in which the main symptoms are referable to the intestinal tract and are characterized by distention of the abdomen with gas and diminution in peristalsis; in these cases there is localized inflammation of the peritoneum probably with adhesions. When the stone enters the common duct and produces obstruction there develops, as a rule, icterus. If the stone remains in the common duct for a considerable time the colic ceases and the chief sign which persists is the icterus. Further symptoms which may occur are fever and chills; these indicate infection. If the stone is small it may pass out into the intestine with subsidence of the inflammation; if it remains long in the duct, then changes in the liver and gall-bladder occur. The gall-bladder becomes smaller, while the liver increases in size. Then one has the picture of enlarged liver, small gall-bladder, and icterus. On the other hand, if the gall-bladder enlarges one may have to do with malignant disease of the pancreas or common duct. In consideration of the long duration of the disease and the changes in the gall-bladder its removal is, as a rule, advised, though in some cases drainage may suffice. Choledochotomy is invariably accompanied by drainage.

The attitude of the author in reference to operation is that in cases of severe acute onset or in those of long duration in which there are marked changes in the tissues no material benefit will be gained by palliative treatment. The only cases suited to internal treatment are those in which there has been only a slight acute attack. Operation should not be delayed so long as to preclude the most favorable result. In the experience of the author one case was lost by hemorrhage, one by starvation, and one by pneumonia. The after-treatment in cases of difficult operation is likewise trying. Great care must be taken to guard against complications in other organs, especially the heart.

RECENT INVESTIGATION ON THE USE OF RADIUM IN THE TREATMENT OF MALIGNANT DISEASE.

KRAPF (*Radium*, vol. i, No. 2, 1913) summarizes the first report of the London Radium Institute, which possesses the largest quantity of radium in the world, probably over 2 grammes of radium bromide. From its stock a large number of applicators have been prepared, varying from 3.5 mgrms. to 75 mgrms. radium content. Two types were used, consisting of a glass tube filled with radium sulphate; and secondly, flat shallow applicators—*i.e.*, trays of German silver on which were varnished one-half to six milligrammes radium (element) in the form of radium salts.

Aluminum, silver, and lead filters, ranging from 0.01 to 2 mm. in thickness, were applied to cut off part of the less penetrating rays, especially in prolonged applications.

In discussing these statistics, and especially the results in cancer treatment, two points must constantly be kept in mind. Dr. Pinch rigidly defines the term "apparently cured" to a condition in which all traces of the original lesions have disappeared, in which there is no sign of any recurrence, and in which the patient is, so far as can be determined by a thorough and careful examination, free from any indication or symptoms of the disease. While this definition considerably reduces the number of "apparently cured" and "cured" cases in the statistics, it is also only fair to state that no cases of malignant diseases (except rodent ulcer) have been treated, "other than those in which operation had been declared to be unjustified, or had been declined by the patient," and that obviously by far the larger part of the patients applying for treatment were cases in which "all the known resources of medicine and surgery had been exhausted, the condition being almost hopeless."

Out of the six hundred and nineteen patients treated, one hundred and thirty-four cases were epithelioma. Of these, eight were so recently treated that the results cannot be definitely stated, fifteen received only prophylactic applications of radium, and in twenty-three cases the treatment was abandoned, chiefly because the patients removed from London. Of the still remaining eighty-eight patients, twenty-two (or 25 per cent) died, in twenty cases no apparent improvement was observed, while the result was favorable in forty-six (or 52 per cent) of the patients. Of these forty-six cases, Dr. Pinch classifies seven as "apparently cured" and thirty-nine as decidedly improved. This result becomes still more interesting when we consider the carcinoma of the uterus separately. Here the London Radium Institute achieves as great success as that in Paris. It seems that, out of twenty-nine cases definitely recorded, three were cured and nineteen improved (together 76 per cent). In a majority of the cases hemorrhage was arrested, discharge diminished and rendered inoffensive, and ulceration healed.

In cancer of the breast, in fifty-eight cases in which definite results are recorded, the treatment failed in twenty-three cases, while in no less than thirty-five (60 per cent) it was more or less successful.

The results are less favorable in cancer of the rectum, ten cases being apparently cured, or improved, while ten died or remained refractory. However, in nearly all cases hemorrhage was more or less arrested and pain alleviated.

"In some instances the growth shrinks in size, undergoes a fibrous transformation, and becomes much less fixed to the underlying tissues, so that a carcinoma which before radium treatment was regarded as inoperable can be easily and completely removed."

Carcinoma of the stomach and of the liver are treated in the London Radium Institute by applying flat applicators outside near the afflicted region, and obviously very little benefit can be expected from such application, though it is recorded that "the pain was lessened, the frequency of vomiting decreased, and the general health improved."

The splendid success the Institute achieved in malignant cases of carcinoma of thyroid and in two cases of Paget's disease was very remarkable. "Rodent ulcer is," to quote Dr. Pinch, "of all the forms of malignant diseases, the one which is most amenable to the action of radium." Of eighty-five cases with complete records, not less than forty-one were decidedly improved; thirty-one "apparently cured" (together 85 per cent successful). The result is even more astounding, as in more than one-half of the cases of rodent ulcer which applied for treatment at the Radium Institute "the destruction of tissue was so great that no hope of satisfactory repair could be entertained." Rodent ulcers of mucous membranes proved to be the most refractory, though very small ulcers of the

palpebral mucosa responded well to exposures of fifteen to twenty minutes of strong unscreened radium applicators.

Only a few cases of sarcoma were treated, of which two were "apparently cured" and nine improved (together 40 per cent). A very rapidly increasing growth of the superior maxilla of a patient seventy-three years old was treated with excellent success. Four cases of Hodgkin's disease are all recorded as being "improved" after radium treatment.

It is well worth noting that, like the French and German authors, the physicians of the London Radium Institute repeatedly insist on the marked analgesic effect of radium application, even in cases in which the treatment was not successful. While the report conservatively advises that in all operable cases of cancer of the breast and of the rectum the use of the knife should be first resorted to, the general conclusion is, however, that radium application is our next best method for treatment of malignant diseases.

The report insists also on the advisability of the routine adoption of postoperative treatment of malignant growths, and of thirty-nine patients who received such prophylactic radium applications only a few showed recurrences.

Of thirty-eight cases of capillary cavernous nevi, favorable results were obtained in all but one case, and in five of these the word "cured," so carefully avoided throughout the report, is confidently applied. Only fourteen cases of keloid were treated, and here Dr. Pinch is compelled to leave his self-imposed restriction and pronounces the results obtained with radium as "admirable." Keloids of recent formation seem to respond quickly. In pruritus, radium is pronounced to be "undoubtedly of great value," especially if this condition is of long standing and associated with leucoplakia, or hyperkeratosis.

Psoriasis is treated in the London Institute with short exposures of unscreened applicators for two or three minutes for several days; seven cases treated have been either cured or improved.

Lupus erythematosus is "usually greatly improved by radium," and weak doses are recommended in this condition. In tuberculous adenitis very long exposures of heavily screened radium applicators succeeded in bringing about a steady diminution in size of the infected glands.

Not being satisfied with restricting itself to local radium applications, the new British institution has in the last month devoted some attention to the treatment of arthritic conditions by means of radium emanation drinking-water, and it is very gratifying to know that the splendid results of the German and Austrian hospitals with this method are confirmed by the British doctors. They observed also incidentally that the emanation solutions produced a definite diuresis and acted as a slight laxative.

EXOPHTHALMIC GOITRE.

MacLaurin (*Australasian Medical Gazette*, April 12, 1913) has made a careful study of last year's work, and considering the pathology of the condition believes that it is now clear that thyrotoxicosis is the result of a long chain of toxic processes primarily due to the absorption of poisons secreted by the thyroid gland; the ultimate cause of such dystrophy is still in the dark. The poison seems to be a form of iodine.

It has been shown that intravenous injection of the expressed thyroid from a Basedow thyroid causes an acute disease in dogs fatal in about six days. The symptoms are a high fever and tachycardia. Pettaval as the result of post-mortem examinations of ten advanced cases of exophthalmic goitre announces (*a*) changes in all glands having internal secretion, probably due to changes in the mutual relationships of connected glands, and to substitution of function; (*b*) in one case necrosis of the islands of Langerhans in the pancreas, with lymphocyte infiltration; in life this patient had marked alimentary glycosuria; in the kidneys were found a few masses of glycogen; (*c*) the adrenal capsules showed atrophy of the medulla, with numerous large cells containing chromatin-bearing

nuclei; (*d*) status lymphaticus in all the cases, in one only of a mild degree—that is to say, the thymus was enlarged, and the lymphatic glands hypertrophied. Matti found six cases of status lymphaticus, of which five showed adrenal atrophy. After thymectomy the adrenals increase. Matti believes that when the adrenals are not functioning properly the thymus grows.

Klose, Lampe, and Liesegang find that the percentage of lymphocytosis is no criterion of the progress of the case. Once lymphocytosis is established it persists for years, if not throughout life, even after apparently perfect cure by operation. In this result they differ from Kocher, who holds that the lymphocytosis is a valuable prognostic sign. They explain the blood-changes as follows: The product of the disfunctioning thyroid, the "Basedow-iodine," poisons the interstitial substance of all the blood-forming glands. As a result of changes in their internal secretions there occurs a revival of the thymus—according to Pettaval and Matti, compensatory to atrophy of the adrenal medulla. The thymus has a direct influence on the lymphatic system, and when hypertrophied in thyrotoxicosis appears to lead to lymphocytosis. This status lymphaticus is apt to persist even after cure of the original disease; hence the lymphocytosis which accompanies it also persists. The extreme importance of these investigations must be obvious.

They are confirmed by Hosemann and Walter, who have experimented on the effects of injection of "Basedow-fluid" upon the regeneration of the nerves. They conclude that thyrotoxicosis is far more than a hyperthyroidism, and that it is in reality an extremely complex series of changes in one organ after another, due to the actual poisoning from the thyroid.

The writer concludes this section, therefore, as follows: Thyrotoxicosis depends primarily upon the constant injection of "Basedow-iodine" into the circulation from the thyroid. This results in atrophy of the adrenal medulla, with compensatory hypertrophy of the thymus, and status lymphaticus. The blood shows lymphocytosis, adreninemia, glycemia, lowered freezing-point, and delayed clotting. There may be necrosis of the islands of Langerhans.

As to diagnosis Riedel states that thyrotoxicosis should always be suspected when general weakness appears without any apparent cause. In two of his cases weakness and melancholia were two of the first symptoms. The blood count is of major importance. It should be carried out in every person suffering from increased debility with nervousness, slight tremor, and palpitation. An *x*-ray photograph may show retrosternal goitre. It must be remembered that obvious goitre may not occur at all.

As to treatment no drug seems to have any real effect in thyrotoxicosis. Digitalis, arsenic, iron, and bromide are practically useless. Absolute physical and mental rest is of the first importance. As Kocher puts it, "Tell the patient to do nothing, and do nothing yourself." Iodine in every form, whether external or internal, is absolutely contraindicated at all stages of the disease. The treatment of thyrotoxicosis by iodine must be looked on as a form of mental aberration. Adrenalin has recently been given. There is at least one case in which its administration was immediately followed by severe symptoms and rapid death. This is not to be wondered at in view of the fact that adreninemia is a feature of the disease. A sugar-free diet might be indicated by the presence of glycemia. It is unwise to carry out a strict antidiabetic treatment, since it is necessary to nourish the patient, who is frequently emaciated. High altitudes are said to be beneficial; the sea-air is undoubtedly harmful. Balint advises a salt-free diet, rich in proteids, fat, and phosphorus. With an absence of sugar a salt-free diet becomes so unappetizing that it is not advised. Pulawski states that the first attack of thyrotoxicosis usually clears up under rest and diet; the second demands operation. He sums up the position by saying that the treatment is neither entirely surgical nor entirely medical; operation should be sandwiched in between a course

of medical treatment. This seems a sensible view, and will commend itself to most people who have had experience of this disease. Meyer considers that medical treatment sometimes relieves, seldom or never cures. Operation can only cure completely in comparatively mild cases. The typical postoperative death is due to heart-poisoning through pouring out of thyrotoxin from the isthmus; and this is more likely to occur when the isthmus has been crushed than when it has been cut cleanly across. As regards the mortality of operation, Wilms lost two cases out of 60, both from pneumonia. Baruch states that medical treatment is useless, operative curative in early cases. Hale White had eleven operated cases, with four deaths. As no doubt the operating surgeons were competent, it is to be presumed that the cases were advanced, and therefore not likely to do well under operation, or, indeed, any other form of treatment. Still one of them seems to have been cured, and others much improved. Mayo has now had 278 consecutive cases without a death. He considers that about 75 per cent are quite cured. The remarkable results of Mayo as regards immediate mortality are due largely to his strictness in selecting cases; his rules for operation are stated later. Many Continental surgeons give the results of operation, taken all round, as showing from 75 to 85 per cent of absolute cures. Klose, Lampe, and Liesegang give observations of peculiar value, in that the results of patients operated on by Rehn in Frankfurt have been confirmed by supervision over a period of several years, thus excluding the relapses which are so common after other forms of treatment. From these observations we are entitled to consider that the relief afforded by operation is likely to be permanent.

All early cases should undergo operation. At least a fortnight should be spent in bed at absolute rest before surgical interference. Mayo's rules are simply not to operate in acute cases, or in times of gastric crisis, or nervous storms, or dilatation of the heart; in such cases rest and *x*-rays are to be tried for some time. If improvement should occur, operation may be undertaken; the extent of the operation depends on the severity of the case. Radical operation is forbidden in advanced cases, in dilatation of the heart, in degeneration.

Generally speaking, the more severe the case the less severe the operation; but there is some difference of opinion as to the exact operation to be performed. Thus, Delore and Alarmartine seem to represent the largest body of opinion in recommending hemithyroidectomy with ligature of one artery of the opposite lobe. They recommend the superior thyroid, because the vasomotor nerves are also then divided, and because ligature of this artery is less dangerous than ligature of the inferior thyroid. They state a general rule as follows: In mild cases ligature alone; should recurrence occur, hemithyroidectomy; in acute cases, excision is dangerous; ligature is prompt in its cure. Preliminary hemithyroidectomy with opposite ligature is only to be used in mild cases with small thyroids poor in blood-vessels and good general cases; in ordinary mild cases, upper angioneurectomy; in more severe cases, at once ligature three arteries. In severe cases with asystole, even ligature is to be condemned. Riedel, on the other hand, goes much farther. He always removes up to nine-tenths of the gland, and always ligatures the opposite inferior thyroid artery as far as possible from the gland. This seemed an extreme measure, and likely to lead to tetany, and possible hypothyroidism. Mayo ties one or both arteries in early cases; in moderate cases he excises half the gland; in severe cases he uses ligature, if he operates at all. Kocher's practice is essentially the same as Mayo's. It is clear that the selection of the operation demands judgment and experience. In future, it is to be hoped that surgeons will have the opportunity of operating on much earlier cases, now that the attention of the profession is being so widely drawn to the urgent necessity of earlier diagnosis.

Local anesthesia is widely used in Germany. Observations as regards its use in Berlin were not at all prepossessing in its favor. Patients may not suffer much pain,

but they certainly suffer great discomfort, and are terrified. Mayo uses open ether, and has no trouble. Meyer strongly advises the administration of oxygen during operation. The general consensus of opinion is that rapidity of operation is of more importance than accurate hemostasis. The importance of carefully shutting off the cut surface of the isthmus, and securing this by Alexis Thomson's method of stitching the isthmus to the pretracheal fascia after its division, is emphasized. Care should be taken not to penetrate the cartilages with the needle.

Some very hopeful reports have been published concerning the results after the use of *x*-rays in a good many cases. Some of these seem to be oversanguine, and to lack confirmation. Further experience is necessary before a definite opinion can be expressed.

In conclusion it is stated that early operation is practically free from danger, in competent hands, and is likely to prove curative in from 75 to 85 per cent of cases.

RESULT OF THE COMBINED METHOD OF TREATMENT ON GONORRHEA.

Osburn (*Journal of the Royal Army Medical Corps,* May, 1913) sends a brief communication dealing with the combined treatment of gonorrhea. The measure adopted for the first ten days was the usual one, viz., solutions of potassium permanganate or protargol for irrigations. This was followed by two or more injections (200 millions) of stock gonococcal vaccine at short intervals, while irrigation with a quadruple sulphate solution containing the sulphates of copper, iron, alum, and zinc was substituted for the protargol, and in obstinate cases injections of solution of iodine or emulsions of cinnamon oil.

The results have been very satisfactory both from the point of view of shortening the period under treatment and the absence of relapses.

Taking the last 100 consecutive cases of gonorrhea it was found that in sixty-two consecutive cases treated in the old way (with irrigation of Condy and protargol) the average period in hospital was no less than fifty-four days, whilst in the consecutive thirty-eight cases which had the combined treatment the average period in hospital has been only twenty-six and a half days, and what is even more important, there has not been any readmission or relapse in these latter cases.

The only drugs given by the mouth have been methylene blue and urotropin.

PATHOLOGICAL DATA OBTAINED FROM ULCERS EXCISED FROM THE WALLS OF THE DUODENUM.

Mayo, W. J. (*Annals of Surgery,* May, 1913), states that chronic duodenal ulcers usually occur close to the pylorus and often produce obstruction. When discovered either at operation or autopsy they were formerly believed to be pyloric in origin and were classified with gastric ulcers. In no other way can we account for the frequency with which chronic duodenal ulcer is now found as contrasted with the statistics of a few years ago. The types without obstruction were evidently overlooked except in the rare instances when perforation or hemorrhage brought about a fatal termination of the malady.

In spite of the low mortality and gratifying results following gastroenterostomy for chronic duodenal ulcer, there must always remain a prejudice against an operation which is indirect and does not actually remove the focus of disease. If, however, obstruction exist, this prejudice is not well founded. The calloused, contracted ulcers with obstruction are ideal cases for gastroenterostomy, which leaves the patient permanently cured. A number of patients upon whom the Mayos performed gastroenterostomy over fifteen years ago remain in excellent health.

In performing gastroenterostomy for the cure of duodenal ulcer, the area of the ulcer should be infolded as recommended by Moynihan. The infolding sutures of silk or linen should be applied in a manner to obstruct the entrance to the duodenum and

prevent food from entering the ulcerated portion. As a rule we place an obstructing suture just above the pylorus for this purpose. This method of producing obstruction, although temporary, will last long enough to enable healing to take place. An ulcer so treated will recur but rarely; if recurrence does take place, it will be necessary to make the obstruction permanent either by complete division of the pyloric end of the stomach and turning both sides in—a method developed by von Eiselsberg—or, more easily but less surely, by drawing a piece of fascia obtained from the sheath of the rectus muscle close about the stomach just above the pylorus and suturing it in such position as to obstruct the lumen, as recommended by Wilms.

Ulcers of the anterior wall of the duodenum may be excised in suitable cases with satisfactory results without performing gastroenterostomy. The excision of the ulcer should be accompanied by division of the pyloric sphincter, using either the Finney or the Heinecke-Mikulicz method of pyloroplasty in the closure. The gastroduodenal opening should be made at least two and one-half inches in length.

The Mayos have excised chronic duodenal ulcers in 52 cases in the clinic at St. Mary's Hospital without performing gastroenterostomy, and excellent results both immediate and remote have followed.

The pathologic examination of these ulcers after excision developed some interesting facts. Basing expectations upon data concerning ulcers removed from the stomach they were surprised to find that many of the duodenal ulcers involving the anterior wall had few of the physical characteristics of gastric ulcers. A gastric ulcer is a punched-out defect in the mucous membrane with sclerosed grayish-white base surrounded by thickened margins of somewhat overhanging mucosa. Ulcers on the anterior wall of the duodenum with obstruction and callus upon excision will often show a defect scarcely larger than a dimple. This defect may resemble a little split in the mucosa and is sometimes surrounded by an area of thickened, congested mucous membrane like a patch set in the duodenum. In several of the Mayo cases showing well-marked callus an ulcer could scarcely be detected, but the changed spot of mucosa directly underneath the callus was very prominent. The size of the callus in the submucous, muscular, and peritoneal coats and the amount of obstruction apparently bear little relation to the actual size of the ulcer, which varies from a mere slit to the size of a pea. Even in the larger ulcers of the anterior wall the base is not often clean-cut and grayish-white like gastric ulcer, but resembles more a moth-eaten patch. The mucous membrane of the duodenum above the common duct is smooth, thin, granular, and has few folds. It may be this anatomical peculiarity which prevents the development of thick ulcers of the gastric type. When the ulcer is of the gastric type—that is, a punched-out defect with a calloused base—a raised corn-like elevation will be found on the peritoneal surface which gives the thickness necessary for the base of the ulcer. In these latter cases there may be a contact ulcer of the mucous erosion type on the posterior wall of the eroded mucous type.

Ulcers of the posterior wall of the duodenum present the same characteristics as those of the stomach—that is, a clean-cut, definitely punched-out area, attached closely to the pancreas and usually completely perforating the duodenum. They are protected posteriorly by a callus which forms the base of the ulcer. In such cases, however, an anterior contact ulcer will usually be found just opposite the lesion on the posterior wall.

In four instances the Mayos excised an ulcer on the posterior wall, suturing the defect from the mucous side. In each case the base of the ulcer was closely attached or fused with the pancreas, and, since it was impossible to get at the posterior wall to apply an outer row of sutures, Mayo contented himself in two cases with a protecting suture at the upper and lower peritoneal angles. In one case a complete division was made of the duodenum after excision of the ulcer with direct union of the end of the

duodenum to the end of the stomach. In the fourth case devitalizing mattress sutures were applied from the mucous side in such manner as to cut out the ulcer.

The excision of these four posterior ulcers of the duodenum proved to be so difficult as contrasted with gastroenterostomy that the writer was not encouraged to continue the practice, although the patients recovered and remained well. He believed, therefore, that the excision of duodenal ulcers should be limited to those occurring on the anterior wall.

The pathologic findings in these ulcers of the anterior duodenal wall have some illuminating features. They demonstrate just why this type of ulcer might be overlooked and probably is overlooked in the average routine examination of the duodenum at autopsy. The findings also explain why the diagnosis of chronic ulcer of the duodenum may not furnish *x*-ray demonstration. A minute ulcer, unaccompanied by obstruction and without deformity, certainly would not exhibit convincing data. The *x*-ray has, however, been a valuable means of diagnosis in the cases of gastric ulcers and those ulcers of the duodenum accompanied with obstruction, not because of the actual demonstration of the ulcer, but by the determination of deformities and perverted muscular function.

Our limited experience in the excision of duodenal ulcers does not permit us to state that all ulcers of the anterior wall of the duodenum are of the above type, and it may not be true of the thick calloused obstructive duodenal ulcers. As these latter cases are not suitable for excision, pathologic material has not been available. These observations may be of value in drawing attention to the fact that at least a considerable percentage of ulcers of the anterior wall of the duodenum have different characteristics from those of the stomach, characteristics which have been the cause of much confusion because they failed to conform to the standard of gastric ulcer.

REVIEWS.

A Text-book upon the Pathogenic Bacteria and Protozoa. For Students of Medicine and Physicians. By Joseph McFarland, M.D. With 293 Illustrations, a number of them in colors. Seventh Edition, Thoroughly Revised. Philadelphia and London, W. B. Saunders Company, 1912. Pp. 878.

Over three years ago (Therapeutic Gazette, May 15, 1910, vol. xxxiv, p. 372) we reviewed critically the sixth edition of this popular text-book, and expressed the view which amounted to a belief that it might have been called a publisher's new edition rather than the result of careful revision by the author. The present volume is an entirely new edition; much new matter has been added and many chapters show evidence of extensive revision; as will be observed, the title has been changed to include disease-producing protozoa. Many of the chapter headings remain the same as in previous editions, but extensive alterations have been made throughout, involving the addition of 169 pages, or more than twenty per cent of new matter. In its existing form the volume probably contains the best and most advanced thought, presented in English, upon the subjects with which it deals. But little revision has been necessary in the chapter devoted to history of the subject; in the presence of such an excellent epitome it requires no little temerity to suggest that the names of American workers, other than Noguchi—for example, Welch, Novy, Vaughan, Theobald Smith—might have been mentioned. The chapter dealing with immunity is an excellent presentation of this most important and interesting phase of biologic science. The author devotes a chapter to discussion of the Wassermann reaction for the diagnosis of syphilis, gives

the technique of Noguchi's modification, and concludes that the majority of workers favor the former. In discussing the nature of the reaction we are told some things that it is not, but not what it is; Professor McFarland looks upon it as an inhibition phenomenon rather than a true complement fixation.

The second part of the book is devoted to infectious diseases and the specific microörganisms, and embraces thirty-seven chapters. In works of this kind one is accustomed to seeing diseases of protozoal origin separated from those due to bacteria, and consequently is hardly prepared for finding malaria, relapsing fever, sleeping sickness, kala-azar, and yellow fever between Mediterranean fever and plague, syphilis and frambesia between rhinoscleroma and actinomycosis, but where classification is difficult or impossible the arrangement does not necessarily detract from the value of the work. In the discussion of sleeping sickness and of trypanosomes, the Rhodesian organism might have been mentioned. The relation of possible animal reservoirs to persisting infectivity in depopulated districts is probably not given the importance it deserves. In the chapter on yellow fever the older views are discarded and the more recent incorporated. Amebic, bacillary, and balantidium dysenteries are considered together. The author has not entered into the discussion with regard to the allegation that pathogenic amebæ have not been cultivated, nor in this respect are the different parts of the text in fullest harmony, as on page 694 we are told that "all cultures of amebas must contain the symbiotic organisms," and on page 695 mention is made of Anna Williams's successful cultivation without bacteria. Nearly as much space is given to balantidium diarrhea—an exceedingly rare affection in this country—as to bacillary dysentery, which is quite common. With regard to the unity or duality of the human and bovine bacilli, the author selects what might be called a middle course, although it would be possible to take issue with the statement (p. 729) that "most authorities believe both human and bovine bacilli to be equally infectious for man." Very excellent descriptions are given of both the human and bovine organisms. References throughout the book have been extended, but many important contributions are in some instances omitted. Thus when dealing with trypanosomiasis reference is given to the work of Laveran and Mesnil in 1907, and no reference to Laveran's exhaustive article in 1911. V. Eisler and Porges have greatly extended our knowledge of the organism of rhinoscleroma, and many references later than 1882 might have been given. There is, however, no more difficult task than the discriminating selection of references; even in a comprehensive treatise exhaustiveness is impossible, trustworthiness is always imperative; the student or other inquirer had better read one reliable original article than many unbalanced ones. Professor McFarland's selections so far as they go are culled wisely.

Mechanically the book leaves a favorable impression; the type is acceptable, the size and weight of the volume, contrary to prevailing American customs, are within reasonable limits. The proof-reading has been well done; a most trifling error (p. 161) makes gram "grain," and, as is usually the case, is so located as possibly to mislead the uninitiated and inexperienced beginner, who not infrequently is also thoughtless and often careless. W. M. L. C.

SURGERY OF THE EYE. A Handbook for Students and Practitioners. By Ervin Török, M.D., and Gerald H. Grout, M.D. With 509 original illustrations, 101 in colors, and 2 colored plates. Cloth, $4.50 net. Lea & Febiger, Publishers, Philadelphia, 1913.

Arnold Knapp, one of America's most accomplished ophthalmologists, describes this book as a sound guide to ophthalmic surgery in the form of a compact though detailed text-book. Further comment would seem to be unnecessary, inasmuch as Dr. Knapp, according to the statement of the preface, has read the manuscript and has made valuable suggestions. The reviewer feels sure that Dr. Knapp's opinion of this text-book will be shared by all those who

read it. No book has ever been written that was free from faults, be they sins of omission or sins of commission, and naturally this work has not escaped in this respect. Clear and sound as the directions usually are, one is sometimes surprised by the omission of procedures, therapeutic and otherwise, of established value. For example, it is now very well established that in certain types of postoperative infection the best results are reached by the administration of autogenous vaccines, and yet these and this therapeutic measure seem to have escaped the attention of the authors. We doubt very much the value of the advice in non-closure of the wound, and therefore presumably of wounds following cataract extraction, that "no special treatment is required except that bandaging should be kept up until the wound is healed." It is exactly this bandaging which provokes a continuance of the non-closure of the wound, and to remove bandages in these circumstances is good advice dating from Horner's time. While it is perfectly true that the glaucoma following discission must sometimes be managed by iridectomy, it would seem to the reviewer that a discussion of the value of cyclodialysis and of trephining in circumstances like these should have been included. The italicized sentence that it seems advisable to perform the combined extraction as a routine operation, leaving the simple extraction for exceptional cases, is interesting. It would add interest to the chapter if something were said about simple extraction associated with buttonholing of the iris (Chandler's method). This surely very much minimizes the chief objection to simple extraction, namely, prolapse of the iris. It is also of interest that there is no description of the Smith operation. Perhaps the authors do not approve of it. It is an operation that is not linely to replace older and well-tried methods. It is not worth while to take issue with the authors with reference to those operations which have been omitted. Each surgeon naturally describes and recommends those procedures which his experience has taught him yield the best results. The fact remains that those operations which have been described are well described, and a most useful book has been produced. For the most part the illustrations are excellent, and we predict for this volume a distinguished success.

G. E. DE S.

THE HEART AND BLOOD-VESSELS. Their Care and Cure. By I. H. Hirshfeld, M.D. The Funk & Wagnalls Company, New York, 1913. Price $1.25. Price by mail, $1.39.

Under this somewhat tautological title, for after all cure and care are the same thing, strictly speaking, the author has prepared a book evidently not intended so much for medical men as for the laity. We have often referred to the difficulties which surround the task of the medical man who attempts to put scientific facts in a form which can be readily understood by those who have no scientific training. In no department of medicine probably, unless it be in connection with the newer methods in serological diagnosis, could the task be more difficult than in dealing with the circulatory system, particularly now that instruments of precision have been introduced for the study of cardiac function. As an illustration of what may be considered an error in statement, which probably depends upon the difficulty of expressing scientific facts in ordinary terms, we may call attention to the statement on page 70 referring to various instruments of precision, including the electrocardiograph, namely, that "all these instruments show only how the heart looks and acts at the moment of examination." In the vast majority of cases we learn nothing about the heart's vital energy, endurance, and ability to take care of the body. We do not receive any answer to the all-important question, "What is the patient able to do, and does his heart allow an active and long life?" Surely this sentence would not be subscribed to as correct by those who are most familiar with the various instruments which are now used for studying cardiac activity.

It would be unfair, however, to take this

sentence as a sample of the character of the rest of the book. Much of it is excellently put together. Before recommending it to a patient we would suggest that the physician read it over in order to determine whether it is suited to the temperament of the individual in view and possibly also to prepare himself for the ideas and questions which may be put forward by the patient after he has perused its pages. There can be no question that the book is better than the average semimedical publication.

THE PSYCHONEUROSES AND THEIR TREATMENT BY PSYCHOTHERAPY. By Professor J. Dejerine and Dr. E. Gauckler. Authorized Translation by Smith Ely Jelliffe, M.D., Ph.D. The J. B. Lippincott Company, Philadelphia, 1913. Price $4.00.

The general practitioner, in the wider sense of the word, will possibly not be greatly interested in this up-to-date treatise dealing with a subject which is now foremost in the minds of neurologists, and which has, in one sense, been superficially studied by those members of the laity who, lacking correct information, have embraced Christian Science or other forms of faddism, like the Emanuel movement, these persons being to the laity what the Freudians are to those neurologists who are not prone to be carried away by temporary enthusiasm.

That psychotherapy is an important factor in medical practice, for both the neurologist and the general practitioner, is clear to any one who has paid the slightest attention to the subject. Many successful physicians practice psychotherapy unconsciously, and their success depends upon this practice. It is also a fact that those who do not resort to psychotherapy often fail. Dejerine states that when he began his practice he was impressed by the small proportion of nervous cases—that is, neuropaths — which were benefited by medicines; that he became more and more convinced that it was not the physical but rather the moral state which is the cause of all symptoms of which these patients complain; and finally, after having practiced Dr. Weir-Mitchell's methods for several years his convictions were established. Dejerine also points out that as a method of general education, or moral guidance, psychotherapy is as old as the world and that all philosophies and all religions, above all the Roman Catholic religion, for the psychotherapeutist is nothing more than a confessor, have applied it and are still applying it.

It is evident that physicians in general should fully acquaint themselves with psychotherapy, and we know of no book which they can obtain which will prove better as a safe and sane guide along this pathway.

THE MODERN TREATMENT OF NERVOUS AND MENTAL DISEASES. By American and Other Authors. Edited by William A. White, M.D., and Smyth E. Jelliffe, A.M., M.D., Ph.D. Volume II, Illustrated. Lea & Febiger, Philadelphia, 1913. Price $6.00.

We have already called attention to the excellent qualities of the first volume of this System. The second volume appears within a remarkably short time after the first, and the various forms of neuralgias and injuries to the peripheral nerves, headache, spasms, disorders, epilepsies, and syphilitic diseases of the nervous system are included in it, as are also cerebral hemorrhage and allied conditions, the toxemias of dangerous trades and drugs, and the surgery of the brain and spinal cord. While the field of neuralgia has not been heretofore a very fertile one in which to sow therapeutic seed, it is remarkable how much efficient treatment can be instituted by those who know how to properly apply drugs and other measures for the relief of affections of the nervous system, and this volume tells how to treat these affections as well as may be done.

THE FIRST SIGNS OF INSANITY. Their Prevention and Treatment. By Bernard Hollander, M.D. The Funk & Wagnalls Co., New York, 1913. Price $3.25, net.

The author points out in his preface that most of the text-books on insanity deal with the subject from the standpoint of the asylum superintendent, whose experience is chiefly concerned with the advanced stages of disease. His object has been to prepare

a book which would deal with insanity in its early stages at a time when the general practitioner is often called upon for an opinion. The book is not written in the form of a text-book, but rather in that of a discourse upon the subject with which it deals. The first chapter is entitled "When is a Patient Insane?" The second chapter deals with disorders of the sexual passions, and the third with disorders of social affections. There are other chapters dealing with disorders of the higher human capacities, such as genius, eccentricities, and insanity. The second part deals with the causes of insanity, the third part with the prevention and treatment of insanity, and Part IV with varieties of insanity and feeble-mindedness. The book seems to us to be one which can be read with profit, but is certainly not in the nature of a clinical manual as it deals with the subject in the form of a story of mental disorders, rather than in the form which most medical books follow.

DISEASES OF THE STOMACH. Including Dietetic and Medicinal Treatment. By George Roe Lockwood, M.D. Lea & Febiger, Philadelphia, 1913.

Dr. Lockwood for a number of years has devoted himself very largely to that department of medicine which is described in the title of his book, has made numerous contributions to medical journals along these lines, and is also the author of a book which deals largely with general diagnosis. This volume is not quite as large as some of those which are devoted to diseases of the alimentary canal, but is plenty large enough to cover the subject satisfactorily. It is essentially a book for the clinician, based largely upon the author's own experience combined with that of others who have had even larger clinical facilities. The illustrations are numerous and most excellent and include not only ordinary drawings but *x*-ray pictures which are far better than are usually seen, as they are distinct and really show something. To those who wish an up-to-date, complete manual for clinical work upon this subject we can cordially commend Dr. Lockwood's latest volume.

MASSAGE: MANUAL TREATMENT AND REMEDIAL MOVEMENT. By Douglas Graham, M.D. With a Chapter on Massage of the Eye by Dr. Darier. Fourth Edition, Revised and Enlarged. Illustrated. The J. B. Lippincott Company, Philadelphia, 1913.

In much the same way that Simon Baruch of New York is known as the American apostle of hydrotherapy, so is Douglas Graham considered the American apostle of massage. Twenty-seven years ago he presented the first edition of his book on this subject, and the present issue is dedicated to the Faculty of the Jefferson Medical College, where he was a student in 1873. As the author points out, this book is largely a record of his personal experience combined with that of other writers. It is designed both as a text-book or manual and also as a reference book. There can be little doubt that the average member of the profession is not sufficiently familiar with the details of this method of treatment and that it is not resorted to as frequently as it should be. This fact is emphasized by the popularity of certain charlatans, who by skilful rubbing produce cures which they attribute to chimerical effects.

The volume first discusses the history of massage, and then proceeds to a consideration of the mode of applying it. The fourth chapter deals with its physiological effect, and the remaining chapters with its use in various forms of disease and functional disorder.

The fourth edition is better than any of its predecessors and shows not only a wide personal experience but a thorough knowledge of the methods of other practitioners of this art.

A TEXT-BOOK OF BIOLOGY. For Students in Medical, Technical and General Courses. By William Martin Smallwood, Ph.D. Illustrated. Lea & Febiger, Philadelphia, 1913. Price $2.75.

There is a far larger demand for text-books of elementary biology to-day than there was a few years ago, because it is being taught so much more commonly in elementary schools and colleges, and also because all of the better medical colleges at the present time require for entrance a year's study which includes this department

of premedical education. For this reason there is naturally a larger market for a book of this kind than has heretofore existed, and the contents of this volume indicate that the author has brought together the facts which are needed in the courses that we have described. The illustrations are excellent, the type large, the paper is good, and the book is thoroughly reliable.

HYGIENE AND SANITATION FOR NURSES. By George M. Price, M.D. Lea & Febiger, Philadelphia, 1913.

If it is true that of the making of books there is no end, at the present time this is certainly true of books designed for nurses. That there is a market for all the volumes which are now being prepared for this class of students is not only indicative of the large number of women who are taking up trained nursing, but also indicative of the fact that notwithstanding their moderate wage they are good book buyers. Of course one of the advantages of books of this kind is that the nurse gets that which is essential for her use without having to pay for the burden of more advanced material required by medical men. There is much information in this book which will prove of interest to nurses, and much which will prove of practical use in their daily work.

PROGRESSIVE MEDICINE. A Quarterly Digest of Advances, Discoveries, and Improvements in the Medical and Surgical Sciences. Edited by H. A. Hare, M.D., and Leighton F. Appleman, M.D. Volume II, June, 1913.

The issue of Progressive Medicine for June contains as in previous years articles upon Hernia, by Dr. William B. Coley, of New York; the Surgery of the Abdomen, exclusive of Hernia, by Dr. John C. A. Gerster, of New York; one on Gynecology, by Dr. John G. Clark, of Philadelphia; another on Diseases of the Blood, Diathetic and Metabolic Diseases, Diseases of the Thyroid Grand, of Nutrition and of the Lymphatic System, by Dr. Alfred Stengel, of Philadelphia; and one upon Ophthalmology, by Edward Jackson, of Denver. All of these authors are so well known to the medical profession as authorities in their various lines that their ability to prepare a competent summary and criticism of medical literature for the past twelve months need not be commented upon. The present volume is copiously illustrated, containing more than 130 engravings, and upholds the standard set by its predecessors.

BLOOD-PRESSURE IN GENERAL PRACTICE. By Percival Nicholson, M.D. Illustrated. The J. B. Lippincott Co., Philadelphia, 1913. Price $1.50.

This is a very brief summarization of the use of the sphygmomanometer, bearing the marks of having been rather hurriedly thrown together, yet containing, on the other hand, many facts of real importance and usefulness to the general practitioner, who is now very properly relying more and more upon this instrument of precision. So far as we have been able to observe in the apparent hurry of its preparation no errors as to statements of facts have crept in. The moderate price of the volume, and the fact that it is not burdened with a large amount of unnecessary statements, will probably cause a very considerable sale. When the second edition appears it is to be hoped that careful revision will be made whereby the contents will become better and more thorough than at present.

BLOOD-PRESSURE FROM THE CLINICAL STANDPOINT. By Francis Ashley Faught, M.D. Illustrated. W. B. Saunders Company, Philadelphia, 1913. Price $3.00.

Dr. Faught's name is familiar to many medical men because of its having been attached to one of the sphygmomanometers which is widely employed. There can be no question that there is room for a work on this subject, as it is a deeper one than those who have carelessly employed the sphygmomanometer imagine. It is well to bear in mind that while the theoretically normal systolic blood-pressure is in the neighborhood of 130, it is a great mistake to force every patient into this category, since some persons have a pressure 10 or 15 points above or below 130 without being in the slightest degree abnormal. As the years go on and changes take place in

the vessels, it is often essential that they should have a pressure considerably in excess of this point. He who peruses Dr. Faught's book will have a very good conception of the points which must be considered in the study of the blood-pressure of the old and young and also of its changes in the presence of disease.

MASSAGE: ITS PRINCIPLES AND TECHNIC. By Max Böhm, M.D. Edited, with an introduction, by Charles F. Painter, M.D. The J. B. Lippincott Company, Philadelphia, 1913. Price $1.75.

This is a much briefer work upon Massage than that of Dr. Douglas Graham which we have reviewed in this issue of the GAZETTE. The illustrations which it contains are excellent, but as there are only eighty-eight pages in the text the descriptions are brief. It is, however, a good practical working manual. He who desires to really be thoroughly in touch with the subject will do well to purchase both of these volumes, as each one contains points or facts which add to the value of the other.

A TREATISE ON THE MINERAL WATERS OF VICHY. For the Use of Practitioners. By Charles Cotar, M.D. With a Foreword by Vaughan Harley, M.D. H. K. Lewis, London, 1913. Price 4s.

Dr. Cotar is a consulting physician at Vichy, and his design in preparing this little manual of about two hundred pages is to present the profession with a summarization of the purposes for which the waters at Vichy may be employed. As this is one of the most popular waters and popular resorts for both Americans and Europeans the book will be welcome, since, when the physician is consulted by a patient as to the wisdom of his going to Vichy, a large amount of practical information can be gained from Dr. Cotar's brochure.

MÜLLER'S SERODIAGNOSTIC METHODS. By Ross C. Whitman, B.A., M.D. Illustrated. The J. B. Lippincott Company, Philadelphia, 1913.

We have had occasion a number of times lately to call attention to small volumes dealing more or less directly with this important subject. Professor Müller's German contribution has been well translated by Dr. Whitman, and the present volume is really representative of the Third Edition of the German text. The design of the volume is to put in the hands of the clinician or laboratory worker the technique of the various serodiagnostic tests which have come to be relied upon so much during the last few years. The text is admirably put together, the descriptions are clear, and the essential details for successful practice of the tests are given with sufficient minuteness to make the text of great practical service.

INTERNATIONAL CLINICS. A Quarterly of Clinical Lectures and Original Articles. Edited by Henry W. Cattell, A.M., M.D. Volume II, 1913. The J. B. Lippincott Co., Philadelphia, 1913.

We have mentioned the preceding volumes of International Clinics so many times, describing their object and scope, that it is not necessary to do anything more than to state that the publication is being continued and is maintaining the standard of its early years. Each volume covers a number of the departments of medicine and surgery.

THE PRACTICAL MEDICINE SERIES. Under the Editorial Charge of Gustavus P. Head, M.D., and Charles A. Mix, A.M., M.D. Volume I, General Medicine, Edited by Frank Billings, M.S., M.D., and J. H. Salisbury, A.M.. M.D. Series of 1913. The Year Book Publishers, Chicago, 1913.

We have so often referred to this excellent summarization of medical literature that it seems hardly necessary to apply equal words of praise to it at this time. Under the efficient editorship of Billings and Salisbury the quality of the text is maintained.

GONORRHEA IN WOMEN. By Charles C. Norris, M.D. With an Introduction by John G. Clark, M.D. Illustrated by Dorothy Peters. W. B. Saunders Company, Philadelphia and London, 1913.

This scholarly, comprehensive work, written in an unusually clear style and beautifully illustrated, constitutes a text and reference book worthy of the highest praise. There is a vividly interesting historic chapter which though brief is singularly com-

prehensive, and a chapter upon Bacteriology which is a gem of practical condensation. Thereafter there is a remarkably lucid description of the changes produced by the gonococcus in the female genital tract. Pathogenesis, Sociology, Prophylaxis are treated in a manner which indicates that the true scientific spirit has for its fundamental basis a sound common sense. Thereafter follow chapters upon the examination of the patient and the manifestations and treatment of the disease as it invades the female genitalia, including Unusual Manifestations and Remote Complications of Pelvic Inflammatory Disease; Gonorrhea in Pregnancy, Labor, and the Puerperium; Gonorrhea in the Extremes of Life; Complications of Non-genital Gonorrhea; Gonorrheal Septicemia, Bacteremia, and Toxemia; Gonorrhea of the Osseous and Circulatory Systems; Gonorrheal Lesions of the Skin, Lungs, Pleura, Kidneys, Nervous System, Ear, Parotid Glands and Muscles; and, finally, a chapter devoted to Gonorrhea Therapy. This brief outline of the scope of the book gives but a faint idea of the entire adequacy with which the author has done his work. The book is destined to become a classic.

THE PRACTICAL MEDICINE SERIES. Volume II, General Surgery. Series 1913. Edited by John B. Murphy, A.M., M.D., LL.D. Chicago: The Year Book Publishers.

In his foreword to this excellent summary of surgical progress Murphy calls attention to the important part played at the present day in the refinements of surgical technique. Such refinement is to insure the minimum contact of foreign materials with the wound. He also alludes to the effect upon surgical practice of the research work upon the class of medicaments called "cell proliferants," as acetamidin, methylamin, neurin, etc., belonging to the class of auxetics, and notes that on the basis of modern knowledge some of the remedies long since relegated to the "have beens," such as boneset, for instance, being possessed of an alkaloid—allantoin—are shown to have the power of greatly stimulating epithelial proliferation and hastening wound repair. Attention is also called to the value of chemical stimulants such as mercury, turpentine, formalin, etc., in the production of polynuclear and mononuclear leucocytosis in the treatment of infective processes, and to the value of ferment or antiferment treatment of cold abscesses.

A 95-per-cent alcohol-soaked gauze dressing, originally advocated by Link, covered with oil paper, on all fresh lacerations or compound fracture injuries is very warmly commended, as is the application of the tincture of iodine to the edges after suture.

The first section of the book is devoted to Anesthesia and Analgesia. Verworn's research is quoted to the effect that anesthesia has common features with asphyxia, the anesthetized human cell being unable to absorb or make use of oxygen, and catabolic changes without oxidation taking place, the paralytic features being simply due to the oxidation changes in the tissues. A general anesthetic is regarded as acting particularly on the cortex, these cells being extremely sensitive to any interference with their O supply. The comparison of anesthesia to sleep is wholly mistaken since in sleep there is an increased consumption of oxygen and return of strength. In anesthesia the opposite takes place. There is no repair of wastage and oxidation is brought to a standstill. Concerning ether Gwathmey is quoted to the effect that ether vapor with warm attenuated air is far superior to the drop method. He advises at the close of an operation 1 to 2 pints of warm saline solution with 1 ounce of glucose per rectum, to restore the glycogenic function of the liver, relieve thirst, and fill out veins, and as the operation is closing or a little later 3 to 6 ounces of warm olive oil to restore the opsonic index. He notes that by this method not one patient in ten will have nausea or vomiting, nor any unpleasant recollections. As to analysis of Gwathmey's quoted statistics it is shown that chloroform is much safer and that ether is three times as safe in Europe as in America. It is laid down as a fact that no anesthetic death is possible to-day, except from experimenting on new lines or from carelessness or igno-

rance. Gwathmey advises that those using the drop method of ether should improve their technique and statistics by a preliminary medication of morphine and atropine or some similar drug or combination, by commencing the anesthesia with 2 to 4 drops of essence of orange (25 per cent, U. S. P.), the drop method of anesthol until the patient reaches surgical anesthesia, and then a change to the drop method, replacing the drop method by some form of "vapor anesthesia," which means the administration of any anesthetic by passing air or O over or through the anesthetic. This assures a definite percentage and a continuous anesthesia with a minimum amount of anesthetic. In order of safety anesthetics are arranged as follows: nitrous oxide, ether, ethyl chloride, and chloroform.

Intravenous Injections of Hedonal, Intramuscular Injections of Ether, Anesthesia of the Brachial Plexus, Paravertebral Anesthesia, and Spinal Analgesia are briefly considered. A large section is devoted to New Instruments, Operative Technique, and Wound Healing.

From the important surgical papers which have appeared during the year Murphy has selected with his customary discrimination and put in clear and condensed form all that is likely to be serviceable to the practitioner. No more valuable volume than this has appeared in the series.

DISEASES OF THE RECTUM AND PELVIC COLON. By Martin L. Bodkin, M.D. New York: E. B. Treat & Company, 1913.

The author states that a zealous purpose of mastering the relationship of proctology to the many ailments commonly treated by the general practitioner has been his aim during a long and varied practice, but in the text of this book he has attempted to simplify the descriptions of the common diseases of the colon, sigmoid flexure, rectum and anus, and to present them in the plainest and most direct language. Following brief chapters upon Anatomy and General Examination, it being stated in the latter that bougies are indispensable in the determination of rectal stricture, there is a sketchy section devoted to Diagnosis and Symptomatology; thereafter a chapter devoted to Catarrhal Diseases of the Rectum and Colon; thereafter some descriptions of the usual surgical diseases of the colon and rectum; and thereafter some descriptions of the usual surgical procedures for the relief of rectal trouble. The book closes with a chapter devoted to the Relation of Gynecology to Rectal Diseases and a Formulary.

CORRESPONDENCE.

LONDON LETTER.

BY J. CHARLTON BRISCOE, M.D.

The influence of the National Insurance Act upon the status of medical practitioners and the position of medicine in general is proving more far-reaching every day. The latest manifestation, and one which will be generally welcome except perhaps in extreme antivivisection circles, is the appointment of a Medical Research Committee by the Chancellor of the Exchequer. This appointment is made in accordance with the recommendations of the Departmental Committee on Tuberculosis, which presented its report to Parliament last March. The duty of the new committee will be to direct and correlate investigation of the etiology and pathology of tuberculosis. The members will be required to formulate a general plan of research at the beginning of each year and to make arrangements for carrying out such plans. Before the scheme is approved by the Chancellor of the Exchequer it will be considered and criticized by an Advisory Council, which will include representatives of the four national health insurance commissions and other government departments concerned in medical work as well as eminent physicians and surgeons. The new

committee will be endowed with a yearly income of about £57,000 to enable it to carry out its duties, and this endowment marks the beginning of a new era, for in the past all general research work has been dependent upon private generosity. There are few institutions in this country which exist solely for the purposes of research work, and of these the best known are the Imperial Cancer Research Fund and the School of Tropical Medicine. Both of these have to depend largely upon voluntary subscriptions, although they are doing a truly national work. The new committee will accomplish a great deal if it can correlate all the various lines of research which are now being followed up by independent workers and arrange for the publication of any results obtained. It may be hoped that research work has received a fresh impetus now that it has obtained the official blessing of a government department.

The working of the panel system under the Insurance Act has given rise to a considerable amount of dissatisfaction both among doctors and patients, and this has caused an agitation in favor of a State Medical Service. It is felt that the present condition of affairs is but transitory and that it is difficult to foresee what further changes are in store for the profession. At a meeting recently held in London to advocate the formation of a State Medical Service it was pointed out that the poor would never receive efficient medical attendance until the doctor was freed from pecuniary anxiety and the trouble of collecting fees. Under the proposed scheme the country would be divided into districts, each of which would be staffed by a certain number of general practitioners working a fixed number of hours per diem, and each district would have attached to it a consulting physician to give a second opinion in doubtful cases and a surgeon for cases requiring operation. This arrangement would prevent overlapping and competition between different practitioners, and would also give them sufficient leisure to keep themselves *au fait* with the progress of medical knowledge. The scheme has only recently been brought forward, and there has been no opportunity yet of presenting it to the profession in general.

The question of the support of medical schools by the hospitals to which they are attached was under discussion by the Metropolitan Hospital Sunday Fund at a recent general meeting. There was a proposal before the directors of the Fund to refuse contributions to any hospital which gave any financial support to its medical school, excepting payment for laboratory work in connection with sick patients which would have to be paid for elsewhere. The effect of the proposal would be to bring the policy of the Sunday Fund into direct line with that of the King Edward's Hospital Fund in this matter. After some discussion the proposal was defeated, but the question of the financial relations between the hospitals and their medical schools is a very thorny one, and the whole subject will have to be thoroughly revised when the reorganization of London University takes place.

It is a pleasure to record that Guy's Hospital has just opened its new medical school building after ten years' work without taking a penny from the funds of the hospital for the cost of the new buildings. But Guy's is in a more fortunate position than most of the other metropolitan hospitals in that it possesses a large income from endowments made at the time of the foundation of the institution. It is thus able to pay is way without having to make continual appeals to the generosity of the public. At the opening ceremony Mr. Balfour suggested that the rivalry of nations in the progress of knowledge had become as great as the rivalry in armaments, and he thought it was hardly less expensive. He made an appeal for the endowment of research, but admitted that this form of generosity did not always find favor with the public as it provided for the vague future rather than for the present.

An interesting case was recently heard in the courts when three London doctors brought an action against a skin hospital for damages for alleged wrongful dismissal. There had been considerable friction be-

tween the medical staff and the managing board, and finally the board requested the resignations of and eventually suspended three of the staff. The board maintained that it had legal power to dismiss the plaintiffs, but the plaintiffs contended that they were appointed for life. The judge held that the board was not acting within its legal rights by dismissing without notice, as there had been no misconduct to justify summary dismissal, and he declared that the plaintiffs still remained officers of the hospital and awarded them damages. This case is one of considerable interest to men holding hospital appointments, as these posts are usually regarded as permanencies except for actual misconduct. As an appeal from the judgment has been lodged, the whole question will probably be threshed out again in the higher courts.

There has been a small epidemic of cerebrospinal meningitis lately in Kent which has caused some alarm, but fortunately later reports show that the spread of the disease has been stopped, and only one death has been recorded. There have been several epidemics of this disease within recent years in different parts of the country, but in the present instance drastic measures have been taken for disinfection and isolation, so it may be hoped that the infection will not spread further.

The annual report of a Home for Inebriates shows the interesting fact that the medical profession comes second in the list of occupations followed by the inmates. They are nearly twice as numerous as members of the legal profession. It is not difficult to account for the disparity when it is remembered that long hours and missed meals form a temptation to resort to alcohol to counteract weariness. Nearly 50 per cent of the cases admitted to the Home have done well, so the institution has certainly justified its existence.

Great preparations are being made to entertain the thousands of visitors expected in August for the International Congress of Medicine. We are sorry that our visitors will not see London at its best, as after the end of July the metropolis is "empty" in the social sense, and nearly all the big houses are shut up. We doubt, however, if our visitors will be able to notice this emptiness, as their time will be fully occupied with the round of scientific meetings and entertainments.

DIPHTHERIA, NOT TYPHOID FEVER.

To the Editor of the Therapeutic Gazette.

SIR: In your issue of June 15, 1913, I note on page 430 a review of a paper of mine published in the *Medical Record* of February 22, 1913, in which it is said: "Fischer in the *Medical Record* reports four *typhoid* cases, and says that from a study of these cases it is evident that effectual treatment consists in giving a large injection of antitoxin at the beginning of the treatment."

May I ask you to correct this so that it reads: "Fischer reported four cases of *diphtheria* in which large doses of antitoxin were used"?

An important point omitted by your esteemed reviewer was the fact that all of these cases were consultation cases, and had received previous treatment with antitoxin, which was my reason for advocating *larger* doses given early in the disease.

I remain, very sincerely yours,

NEW YORK. LOUIS FISCHER.